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THE TREATMENT OF ACUTE EPIDEMIC ENCEPHALITIS*

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Omaha

EPIDEMIC encephalitis as a separate entity is of recent origin. A glance through the history[1] of the epidemics of the medieval times leads one to believe that such conditions as "sweating sickness," etc., belonged to this syndrome. Unfortunately, the rarity of the disease and its intractability have made it poor subject matter from the standpoint of therapeutics.

Since 1918, in the United States and in Europe,[3] the number of cases[2] has reached epidemic proportions possibly only twice, with the result that the acute condition has not been seen in numerous enough instances to allow a searching and detailed investigation from the standpoint of clinical and experimental evidence. Neal,[4] thinks that the etiology may be related to toxins from metabolic disturbances of other infectious diseases, while Zinsser[5, 59] feels that a filtrable virus is at fault and the effects are allergic or similar to those of a lead encephalitis. Rosenow[6] has much evidence to show the relation of a virus, streptococcic in origin.[9]

Epidemic encephalitis is diagnosed[7, 8] almost entirely by exclusion of other syndromes[48] involving the central nervous system. The difficulties of diagnosis are increased by the variation of the symptoms in different phases of the disease. The clinical behavior is quite different during epidemics from that of sporadic cases or recurrent cases. Briefly, the conditions from which it must be distinguished are botulism, brain tumor, brain abscess, miliary tuberculosis, anterior poliomyelitis, cerebro-spinal syphilis, drug poisoning, such as luminal, veronal (especially in old people), methyl alcohol and choral; finally, malaria, uremia and hysteria.

These various conditions are referred to briefly. So similar is botulism[10] to encephalitis that during the earlier months of the epidemic in England in 1918, it was referred to as botulism. Botulism has a history of the ingestion of spoiled food. The spinal fluid is milky in character, containing large bacilli and as many as 2,000 polymorphonuclears. The condition usually involves a large number of people in the same group or family, whereas in epidemic encephalitis two cases in the same family are rare—several having been reported in the French literature, one occurring in my own experience.

Brain tumor and brain abscess may present cardinal symptoms of an epidemic encephalitis. The usual points of differentiation are the localizing or focal symptoms, together with the spinal fluid findings such as increased pressure and cell count. The presence of a choked disc is the most significant factor in the diagnosis of a brain tumor, as it rarely occurs in epidemic encephalitis. A brain abscess must always be thought of where there is a history of either an otogenic, pulmonic or traumatic head infection.

The difficulties of diagnosis are best illustrated by a case with seventh nerve palsies, lethargy and many symptoms typical of epidemic encephalitis. The spinal fluid had an increased globulin cell count. At autopsy it proved to be a carcinoma of the prostate with metastases, so situated as to involve cranial nerves, substantia nigra and lenticular nucleus in a manner suitable to the simulation of the well-known encephalitis syndrome.

The differentiation between epidemic encephalitis and acute anterior poliomeyelitis[11, 13, 14, 15] is practically impossible in a microscopic examination of the tissues.[12] It will be seen therefore how difficult the clinical differentiation is. Poliomyelitis occurs largely in epidemics

*From the Medical Department, Creighton University, Presented before the Southern Minnesota Medical Association, Rochester, Minn., Oct. 3, 1928.

during the summer. Numerous cases will be found in one family. The spinal[16] fluid in its early stages always contains an increased number of polymorphonuclears, together with other signs of an acute infection. Palsies are more permanent,[17] and usually involve single muscles or muscle groups of the extremities. It is more largely a disease of infancy and early childhood.

Epidemic encephalitis,[18] in contra-distinction, occurs more often in adults, usually in the winter time, and in conjunction with involvement of the upper respiratory tract. It is usually accompanied by involvement of some of the cranial nerves. It practically never results in a permanent or lasting paralysis, although fleeting paralyses are not uncommon.[19, 20, 21, 22] It is rarely seen affecting two members of the same family. Amoss[23] was able to produce poliomyelitis in a monkey by means of infected nerve tissue from human beings, but was not able to produce it from their spinal fluid. On the other hand, over 75 per cent of animals injected with the spinal fluid of encephalitic patients came down with the encephalitis. In addition, serum from patients convalescent from poliomyelitis protected his animals from poliomyelitis. It was also shown by Levaditi and Harvier[24] that animals recovered from poliomeyelitis are susceptible to epidemic encephalitis,[25] while animals recovered from epidemic encephalitis seem to have acquired an immunity to anterior poliomyelitis.

The condition which offers the greatest difficulty and is of the gravest importance is cerebro-spinal lues.[10] It has been our experience that a positive Wassermann reaction of the spinal fluid can be most deceptive. A series of cases of epidemic encephalitis, which we have been able to study over a definite period of time, exhibiting a positive Wassermann reaction in spinal fluids, is probably illustrative of the caution that must be exercised in the differentiation between these two important diseases. Syphilis of the central nervous system can present a typical cranial nerve palsy, the increased cell count and an increased globulin, the usual luetic gold chloride curve and a positive Wassermann. Fever, lethargy and insomnia, restlessness, dilirium and ptosis are usual symptoms of both syphilis and encephalitis.

The first case, a young woman aged 32, when first seen complained of photophobia, blurred vision, muscle twitching and a cold in the head. This was accompanied by convulsive seizures and muscle spasms several times a day. She was troubled with insomnia and extreme hyperacusis. The deep reflexes varied from day to day. The first spinal fluid, Feb. 20, 1922, contained six cells, a positive globulin, with a negative Wassermann and gold chloride 0-0-1-1-1-0-0-0-0-0. March 16 we have a similar report, except that the gold chloride was 1-1-1-1-0-0-0-0-0-0. April 24 the globulin was three plus, Wassermann was negative, and the gold chloride 0-0-1-1-0-0-0-0-0-0. July 16 the globulin was two plus, Wassermann four plus, gold chloride 3-2-1-1-1-1-1-0-0-0. September 7 the globulin was one plus, Wassermann negative, gold chloride 1-1-1-1-0-0-0-0-0-0. After an acute course of nearly two years the patient has made almost a complete recovery, except possibly for lack of confidence in herself.

The second case, a young woman aged 39, complained of occipital headaches, dyspnea, sweating of the hands, crying spells, blurring of vision, insomnia, vertical and horizontal nystagmus, and disturbance of all the deep reflexes. The blood Wassermann was negative. There were three cells in the spinal fluid, plus one globulin and three plus Wassermann, with a gold chloride of 0-0-0-1-1-1-1-0-0-0. This patient had completely recovered within five months, and so far as we know has remained well until the present time.

L. K., aged 25, was seen August 3, 1922, complaining of nervousness and palpitation. This was accompanied by twitching of the muscles, blurring of vision and diplopia, headache, insomnia and thirst. Myoclonic movements and a diaphragmatic tic were most serious. There was also present a horizontal nystagmus. August 6, the blood Wassermann was negative. The spinal fluid showed two cells, two plus globulin and four plus Wassermann. The gold chloride was 1-1-1-1-0-0-0-0-0-0. August 31 the globulin was plus one, three cells, Wassermann negative. October 4, the spinal fluid Wassermann was negative, and the gold chloride was 1-1-1-1-0-0-0-0-0-0. The patient had one .4 gram of neosalvarsan intraveneously and no other antiluetic treatment. She has made almost a complete recovery except for some residual bladder disturbance.

M. H., twenty years of age, was seen in 1920. Her chief complaints were twitching of the right eye, right sided occipital headache accompanied by photophobia, insomnia and extreme restlessness. The deep reflexes were disturbed and the right lower facial nerve was paralyzed. The knee jerks were absent. There was a bilateral clonus and a Kernig sign. The blood Wassermann was three plus. The spinal fluid contained three cells. The spinal fluid Wassermann was negative and the globulin negative. The gold chloride was 0-1-2-2-3-0-0-0-0-0. This patient was ill about two and a half weeks, became cyanotic and died quite suddenly.

The fifth case, M. C., aged 42, complained of vomiting. Because of her vomiting she had undergone varied medical and surgical treatment, consisting of appendectomy and oöphorectomy in the previous three months. The chief symptoms were headache, vertigo,

double vision, marked nystagmus to the left, general retardation of all reflexes, marked ataxia. The patient walked in a circle to the left and showed a tendency to fall in that direction. The blood Wassermann February 7 was negative. The spinal fluid showed four cells, globulin three plus, spinal fluid Wassermann four plus, gold chloride 0-4-5-5-5-4-5-5-4-3. February 9, two days later, the spinal fluid contained four cells, globulin three plus, the spinal fluid Wassermann was three plus, and the gold chloride curve was 0-1-1-2-3-4-5-3-1-0. The patient was put on vigorous anti-syphilitic treatment during the few days that she remained alive. Ataxia, stupor, and incoördination increased, and the patient died two months and a half after she was first seen. An autopsy performed one hour after death showed an absence of pathological changes except in the central nervous system. The left hemisphere of the cerebellum showed the dentate nucleus of grayish pink color, and bulging of the cut surface. There was no evidence of lues or tuberculosis. The "cuffing," minute hemorrhages and perivascular infiltration in the mid-brain and cerebellum completed the picture of epidemic encephalitis.

TABLE I

Patient	Date	Blood Wass.	Cells	Globulin	Wass.	Glucose	Gold Chloride
(1) E. P.	2-20	Neg.	6	Plus 1	0	.068%	0-0-1-1-1-0-0-0-0-0
	3-16		3	Plus 1	0	.050%	1-1-1-1-0-0-0-0-0-0
	4-24		3	Plus 3	0	.049%	0-0-1-1-0-0-0-0-0-0
	7-16		0	Plus 2	Plus 4	.060%	3-2-1-1-1-1-1-0-0-0
	9-7		3	Plus 1	0	.060%	1-1-1-1-0-0-0-0-0-0
(2) C. J.	7-2	0	3	Plus 1	Plus 3	.050%	0-0-1-1-1-1-1-0-0-0
(3) L. K.	8-6	0	2	Plus 2	Plus 4	.060%	1-1-1-1-0-0-0-0-0-0
	8-31		3	Plus 1	0		0-0-0-0-0-0-0-0-0-0
	10-4		?	?	0		1-1-1-1-0-0-0-0-0-0
(4) M. H.	1-10	Plus 3	3	0	0		0-1-2-2-3-0-0-0-0-0
(5) M. C.	2-7	0	4	Plus 3	Plus 4		0-4-5-5-5-4-5-5-4-3
	2-9		4	Plus 3	Plus 3		0-1-1-2-3-4-5-3-1-0

The Wassermann reactions in five cases of Epidemic Encephalitis

The Wassermann, either in the blood or in the spinal fluid, can assume any particular form,[35] especially in the condition as acute as an epidemic encephalitis. Several authorities, such as Strauss and Globus,[7] Suchat,[26] Crampton,[27] report the following: Six positive Wassermanns out of thirty-two spinal fluids. Eskuchen,[28] an occasional positive Wassermann in sixty-two spinal fluids of fifty-three cases. The therapeutic test is probably the best means for final differentiation between the two conditions.

Practically all authorities agree on a syndrome which is typical of encephalitis. This may be summarized[29] under fever, diplopia, lethargy, insomnia, delirium, ptosis. The diagnosis often escapes us because of our failure to obtain detailed histories. Diplopia, cranial nerve palsies, together with disturbances of the extremities or the sphincters, are often of such short duration that careful examination is necessary to bring out the fact that they have existed in the earlier stages of the disease. One case with a diplopia which had existed for three days lost it while I was examining him. Double vision is present in a large majority of cases, and at least a history of blurring will be given by the patient if he is closely questioned. The escape of saliva from the angle of the mouth, the biting of the cheek, the weakness of an extremity will be mentioned by the patient, and to the experienced observer means a passing palsy of an epidemic encephalitis. Neal Jackson and Applebaum[30] feel that the condition is missed many times because a physician is looking for lethargy, insomnia and cranial nerve palsy in every case. Lethargic encephalitis, the synonym for epidemic encephalitis, has been a misnomer to the

extent that lethargy or extreme stupor was necessary to the completion of the syndrome. Many cases, however, will present extreme restlessness and insomnia in the earlier stages. It is only as they are overcome by the progress of the disease that the lethargy appears.

The innumerable syndromes that the condition presents add to the confusion in diagnosis. The efforts made by various authorities[17] to classify types of encephalitis have all resulted in failure. The greatest difficulty that we have experienced in diagnosis is that we have not followed the dictum of our beloved teacher, Theodore Janeway, *i.e.*, merely to observe the symptoms and signs as they present themselves. To summarize the above outline of diagnosis of epidermic encephalitis, the best plan for a physician to follow in a syndrome pointing to involvement of the central nervous system would be to stand back and observe the case from a distance for the purpose of getting a proper point of view. Too close application to a detailed study of each symptom obstructs the true picture and blinds the observer to a syndrome which is as typical as epidemic encephalitis.

The treatment of the condition, then, after the first therapeutic requisition, diagnosis, has been satisfied, falls under two heads: (1) dealing with the earlier weeks of the disease; and (2) with the so-called more settled form and later complications. The scope of this discussion is limited to the treatment of the acute forms. It is to be remembered, however, that during the first one or two years, the fire which seems to smolder, or to all intents and purposes to be completely out, may flare without any known reason and require just as strenuous measures in its treatment as the condition did in its earlier days; in fact, it is almost universally agreed that the co-called complications of the later stages are reinfections accompanied by invasions of other parts of the brain stem. Rosenow[6] so states in Mayo Clinics, 1927.

Treatment[7] may be classed under drugs[68, 69, 72] mechanical and immunological.[61, 62, 64, 65] Drugs are useful for the symptoms. Sodium salicylate[56, 39] with glucose[31, 38] and urotropin[32] may be used intravenously, per rectum, or by mouth.[73] Various authors present results following sodium salicylate[41] therapy, which do not impress one with any degree of permanency or efficacy. Neutral acriflavine[33, 40, 74] and mercurochrome intravenously, potassium permanganate[36] and mercury[37] have been widely advocated. Many advise the use of sterilized milk[34, 60] intramuscularly.

Under mechanical measures, repeated lumbar puncture is most often mentioned, and judging from the various results the most effective. Kubie[42] advises forced fluids and repeated punctures. The removal of infections,[57, 58] the production of sterile abscesses,[77] repeated cleansing[78] of the upper respiratory tract, rest in bed, hospitalization, isolation are among the methods more commonly reported.

Immunological[67]—the most popular preparations are the autogenous vaccine[44, 46, 49] made from nasal washings; convalescent serum[45, 50] for intravenous use[70]; the Rosenow serum[47, 48]; and the use of spinal fluid[52, 53] of the patient for reinoculation into the vein of the patient. Inoculation with malaria has resulted unfavorably.[51]

Hiccough[54, 66, 76] is one of the symptoms which seem to have attracted the most attention, especially after Boyd's[21] excellent work in Winnipeg, where an epidemic in hiccough preceded the epidemic of encephalitis by about a year. We are all familiar with sporadic cases of hiccough, particularly in the younger individuals, which are quite persistent and seem to have no relation to the usual gastro-intestinal type of hiccough. Possibly the most effective measures used to combat this have been the subcutaneous use of ether according to Gibson[63] of New York; the repeated doses of luminal, lavage, the use of Hoffman's anodyne, morphine, lumbar puncture, dilation of the rectum, applications to the epigastrium, even freezing of the phrenic nerve as mentioned by Dowman.[80] They all seem to be effective in different cases. Cases may be severe enough, however, to require chloroform.

The insomnia is most intractable to the ordinary soporifics and occasionally morphine is necessary to control it. Lumbar puncture is the most effective remedy.

All eye symptoms, such as diplopia and ptosis, demand little from the standpoint of symptomatic care. The abdominal and bladder crises can be quite annoying, but will respond as a rule to bladder irrigations and the use of opium.

A definite procedure is desirable in the handling of these cases: (1) Absolute rest in bed

with complete isolation from all outside stimuli; (2) symptomatic relief; (3) lumbar puncture, repetition of which depends on the spinal fluid pressure at the time of the puncture and the relief obtained therefrom. This, in my hands, has probably afforded more constant and effective comfort than any other one procedure. It is usually carried out when the patient is first seen for the purpose of completing the diagnosis. The spinal fluid is allowed to escape slowly until the flow is practically a minimum, stopping from time to time to check up on the pulse, and to inquire of the patient, if conscious, as to the presence of a headache. Very often the complaint of a flat feeling on the top of the head is sufficient indication for stopping the drainage.

The recognition of the comatose or irrational state of the patient is an important factor in handling an acute epidemic encephalitis, especially in the stage of insomnia. The demands of the patient, which on their face seem to be most rational, excite the sympathy and intense interest of relatives and nurses. Frequently patients in this series upon recovery had no recollection of their condition during the earlier weeks or even months of their sickness, although they may have seemed quite rational while passing through this period.

From a diagnostic standpoint, repeated detailed examinations of the reflexes are of value. Frequently it is impossible to demonstrate certain pathological reflexes which were present twenty-four hours before. The constant change of reflexes is pathognomonic of epidemic encephalitis.

It might be wise to emphasize the necessity of protecting the patient from all outside stimuli. This is particularly true if the patient is suffering from insomnia and restlessness. This insomnia can probably be explained by the fact that the brain centers permit sleep when outside stimuli are removed, or when, according to physiologists, the neurological connections have been separated, or at least dulled. It is easy to conceive of these endings being so involved, irritated or disturbed by the perivascular infiltration, hyperemia, etc., that they are highly irritable to what, under normal and ordinary conditions, would not be considered as a stimulus. Hearing becomes enormously exaggerated, and is the main factor in preventing sleep and quiet. Several examples of this hypersensitiveness will illustrate this point. One case was grievously disturbed by the passing of cars and trucks on a highway three blocks distant. Another patient showed all the manifestations of severe pain and restlessness, in fact, complained bitterly when a gentle breeze struck the skin at any place, because of the pain that it produced. Photophobia is a well-known example of the hypersensitiveness. From a mental standpoint it is just as irritating to ask the patient questions or carry on a conversation in his presence as it would be to rub an open wound in any part of the body. The mere presence of the occasional visitor in the room in a case of acute epidemic encephalitis is a source of irritation and restlessness which may last for hours.

Foci of infection demand most careful and complete removal. This has generally been carried on some time within two or three weeks after the invasion of the encephalitis and should be done with as little disturbance or excitement as possible. In none of the cases in this series have I seen anything but benefit result from the removal of infections after I was sure that primary vehemence of the invasion was subsiding. The elimination of these foci is the most important factor in the prevention of the recurrence of the disease and the later complications.

After the usual mortality of 33.3 per cent has been satisfied, the recurrences and post-encephalitic complications can be reduced to a minimum if two factors are adhered to most strictly: (1) Absolute rest in bed; (2) the removal of infections.

After the so-called acute stage has been passed, the patient then enters the most difficult, and yet the most important, stage of his treatment. In a large majority of cases I have found that encephalitis has occurred in patients where grave domestic or financial trouble has been present. With a return of consciousness and subsidence of the acute symptoms, the patient's old worries returned and became a most serious factor in the retardation of his recovery. With returning strength many patients become strongly insistent on getting up from bed, and if allowed to do so, the incidence of recurrence and post-encephalitic complications is markedly increased. The patient must get a bed philosophy, as it were. It must be impressed upon him that complete mental and physical rest are necessary. The

repetition and explanation of these facts, with insistence on their importance, is probably the only way that this can be accomplished.

Following this stage of energetic determination to reassert himself and take up his active duties, the patient often lapses into a definite period of lack of confidence and a feeling of inferiority. This must be met by suitable psychotherapeutic[79] measures, muscle training, massage and baths—an exercise of patience again, extending over periods of months, until to one's surprise the patient gradually reasserts himself and is able to take a part again in life's activities. As a rule, however, from the standpoint of the business world or household, the majority of these patients seem unable to assume complete responsibility of even the more simple positions.

A word is not out of place in regard to the use of the Rosenow serum. It has been used on a number of cases reported in this series in conjunction with the other methods described above. The number has not been large enough, however, to make comparison with the control series over the same period, so that one is unable to judge the results of the serum. One series of cases is reported by A. J. Hall,[75] where 170 cases were treated with Rosenow's serum; 85 were improved, 43 showed no change, and 40 cases were doubtful. It seems to me that the use of this serum should receive a very thorough and detailed trial. The collected papers of the Mayo Clinics for 1927 show most clearly the results that have been obtained by Dr. Rosenow[55] in the inoculation of animals by material taken from upper respiratory tracts, brain and teeth of patients suffering from epidemic encephalitis. It has been my privilege to see many of these animals at the time that Dr. Rosenow was carrying on this work, and the production of symptoms so similar to that of the patients was most extraordinary.

On this basis, then, the organisms used by Rosenow in the production of his serum bear a close enough relation etiologically to epidemic encephalitis to demand the most intensive use and study of the serum in a condition so baffling and fatal as epidemic encephalitis.

The use of the patient's own spinal fluid intravenously has been strongly advocated by several authorities[52, 53] and was used in several cases. One patient, suffering with extreme myoclonic contraction and twitching, was given 10 c.c. of her own spinal fluid intravenously every five days for four treatments. The result appeared miraculous because the condition rapidly subsided, and yet I have no way of saying that this would not have occurred without the use of the spinal fluid. It seems to do no harm.

To sum up, then, in the treatment of acute epidemic encephalitis, diagnosis is the first and most important requisite; the second, absolute rest in bed and freedom from stimuli; third, repeated lumbar punctures; fourth, removal of foci of infection at a suitable time; and fifth, psychotherapy and physiotherapy directed toward the restoration of the patient's confidence both in his mental and in his physical functions.

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DISCUSSION

DR. L. H. ZIEGLER (Rochester, Minn.): At the Mayo Clinic we have seen relatively few cases of acute epidemic encephalitis. Occasionally patients are brought here in the acute stage, but most of the cases are in the chronic stages. It has been our experience that 25 to 30 per cent die. Seventeen per cent of those we saw in the acute stage are well. I have on record several patients who had an acute attack of epidemic encephalitis and were seemingly perfectly well for from five to seven years, when chronic sequelæ came on. We know of one or two who in the acute stage received nothing but spinal drainage and are now perfectly well. We cannot be very enthusiastic about what we have done for these patients.

DR. E. M. HAMMES (St. Paul): I was very much interested in Dr. Heagey's paper, particularly in the surprisingly high percentage of recoveries he was able to obtain. We have not been so fortunate. In a series of approximately 800 cases which we encountered since 1919 I do not believe over 1 per cent made a complete and permanent recovery. A much larger percentage recovered sufficiently to return to their former occupations and life of usefulness, but manifested some sequelæ such as reflex changes, mild motor or sensory defects, central pains, tics, and so forth, and particularly slight but definite personality changes. In others there was a recurrence. The longest interval was in a woman who made a complete recovery, remained well for one year, then had a flare-up of her old symptoms and has been an invalid ever since. During the acute phase our treatment consisted in prolonged rest in bed, frequently repeated spinal drainage until the pressure became normal, salicylates or acriflavine intravenously.

IMPRESSIONS FROM A SURGICAL STUDY-TRIP ABROAD*

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THE attention of the American visiting German medical institutes for the first time is immediately arrested by the distinct separation of all the clinical units. In fact, each teaching branch represented in the curriculum, when its importance and size justifies it, has its own building: surgery, internal medicine, obstetrics, together with gynecology and other specialties. Each has its own hospital, and, as the visitor is soon to learn, this individuality pervades the German system of medical education.

Each hospital unit has its own laboratories, including complete *x*-ray equipment and other paraphernalia necessary for diagnosis and treatment, or essential to clinical or experimental investigation.

This duplication of facilities, especially in the way of laboratory equipment, strikes the visitor from an American hospital as a frank abuse of economy, and contributory to a spirit of independence and lack of co-operation between departments. However, this individuality is fundamental and basic in their plan, and herein lies the secret of the success of German schools in the training of men destined to go far in their profession.

Shut off from daily contact with his colleagues in other specialties, the German professor of surgery develops an independence of reliance on his colleagues in other specialties that is really remarkable. He learns and masters all the diagnostic and therapeutic agents necessary for the care of the patients for whom he is responsible.

It was my good fortune, while an assistant in the surgical clinic of Berne, to see this method in operation at its best. Here, Prof. de Quervain, Kocher's successor and one of the most distinguished of his many pupils and followers, is a shining example of individuality in the practice and teaching of surgery. To all American students of medicine, he is known for his nonpareil "Textbook of Clinical and Surgical Diagnosis" and for his work in the field of goiter. When one observes him localize a lesion in the brain or examine the gastro-intestinal tract roentgenologically, with the same facility with which he arrives at a differential diagnosis in the case of goiter, one's admiration is at once aroused. In the field of operative surgery, he performs the wide range of procedures that come within the broad scope of general surgery.

Privileged to work at a problem under his guidance, I had the opportunity to learn at first hand some of the ramifications of his knowledge. I soon realized that it extended to books, apparatus, the preparation of microscopic sections, photography and other essentials requisite to investigation, in the same degree as in the care of patients.

In this regard, Prof. de Quervain probably represents the acme of scholarship in surgery. Such is the aim of the German system† of training. As can readily be appreciated, it is purchased only through a long period of training assiduously devoted, without stint of personal sacrifice, to the attainment of an ideal—the acquisition of skill and knowledge.

UNDERGRADUATE INSTRUCTION

Our medical undergraduate, accustomed during the last two years of his course to daily contact with patients in the wards and outpatient departments, would find the German system deficient in this particular. Their student obtains his clinical training entirely through systematic lectures and clinics. German schools consider it essential that the greater portion of the teaching in each division emanate from the personality of the Chief of the Department. Intimate contact between student and patient in the ward doesn't exist, and takes place in only a desultory fashion, for a very limited period of time, in the outpatient department.

The English system of clerks and dressers‡

*From the Department of Surgery of the University of Minnesota. Presented before the Study Club of the Ramsey County Medical Society, Nov. 15, 1928.

†No attempt is made to submerge Swiss surgery in the German. In Switzerland, a country about half the size of Minnesota but with twice the population of our state, there are five medical schools. German is the language of the schools at Berne, Basle and Zurich, while Lausanne and Geneva belong to that part of Switzerland where French is spoken. The schools of German Switzerland have frequently had German professors as heads of their departments, and their clinics as well as their methods of teaching are typical of those seen in Germany. The late Kocher as well as Prof. de Quervain, however, are native Swiss.

‡We employ the designation "clerks" for both medical and surgical ward students.

has furnished the prototype for our own method of ward instruction, and it is in England that we find the practical training of students at its best. Brought into contact with patients about a year earlier in their career than our students, and drilled daily in making physical examinations and history-taking, later actively participating in operations, we find the English student emerging from his medical undergraduate days less imbued with the theories of medicine but well-versed in its practice.

Fortunately for the German student, he usually spends a year or more on hospital services before going into practice, without which apprenticeship he would be completely at sea in the care of patients.

In France, when the student commences his studies of anatomy and physiology, he attends the hospitaly daily, where, in small groups, he is shown and taught the elementary but cardinal symptoms and physical findings of the "pathology of the living." Then, as he progresses in his studies, he may, in considerable degree, elect the nature of his work, the contact with the patient being ever kept in the foreground.

Certainly, the practical apprenticeship can be overdone. To stimulate a student's best efforts and to whet his curiosity and interest by an early contact with patients, is a commendable practice and an innovation that should find wider approval in our schools. Half of the beginner's time spent in this manner, however, as exists in some French schools, would seem to be a misuse of serious effort. The daily attendance of surgical dressers as assistants in the operating theater, as practiced in England, I should consider misplaced zeal.‡

The problem of methods of teaching and training in medicine is a very important one. No wholly satisfactory scheme exists. At the termination of the systematic period of instruction, there is no doubt that the English graduate is the best qualified practitioner. Whether the product of such a training is any better, when the inequalities of method have been partially erased by a year or more of hospital interneship by representatives of each group, is a pertinent query.

‡Kocher believed that students should be taught the possibilities of what surgery could offer patients and the principles of the commonly performed operative procedures. The manner or technic of their performance he taught only to graduates desirous of acquiring a surgical training, and only infrequently did he operate before student clinics.

A feature of the English method, contributory to no ultimate good, is the optional (and too frequently elected) direct entry from the high or preparatory school to the medical college. True, the graduate attains to an earning capacity earlier than elsewhere, but frequently at an age immature for the exercise of that judgment demanded of one concerned with the care of human life, and lacking in that preparation so valuable to one anxious to pursue further the search for knowledge.

The academic freedom allotted the German medical student is interesting; attendance at the various classes is not compulsory. A successful acquittal at the final examinations, after having exhibited satisfactory evidence of registration for an adequate number of school sessions, fulfills all requirements. Free from obligation or responsibility in the ward, and attached to any one institution only by loose ties, the German medical student† is at liberty to migrate about with the seasons as his taste for lecturers or diversions dictates. One semester may find him in Berlin, another in Freiberg or Heidelberg, and another even in the Viennese school in Austria.

An institution in the British Isles that is popular not only with the undergraduate student, but with every physician, as well, is the pathological museum. Every hospital has one, where the student may, throughout his entire course of instruction, seek out and study the objective effects of disease on the organism. In this manner, the student is in a position to more effectually correlate the symptoms of disorder with their issue in the body. In London, the medical student in like manner has access to the Museum of the Royal College of Surgeons, to which the rest of the world can boast no equal. Here physician and student may come for enlightenment, in any detail of gross morbid anatomy that he wishes to study. The specimens are exposed on shelves in excellently lighted rooms, and arranged with reference to anatomical and disease subdivisions. An unusual and most valuable feature is that each shelf has a book in which not only is to be found a description of the specimen, but the medical history of the patient who contributed the specimen!

†Women medical students are numerous in Germany. Several schools in England exclude women.

POST-GRADUATE TRAINING IN SURGERY

In the teaching hospitals of England, even where professorial units exist, the so-called full-time professor shares equally in the division and care of patients with his fellow colleagues who have hospital appointments. In consequence, a surgical division of 250 to 300 beds in England or Scotland will have five to six or more full surgeons, and as many junior surgeons, in attendance, many of whom use their hospital appointment as a high road to private practice. In such a plan, the attainment of a surgical training goes hand in hand with the simultaneous acquisition of a private practice.

Contrast this with the German plan:

It should be stated that the German teaching hospital is essentially a monopoly. Each university clinic is in sole charge of the chief, who in his small domain exercises an almost unqualified jurisdiction, the like of which, I dare say, no monarch can boast. All the beds in the hospital come under his direct supervision. This system, it may truthfully be said, smacks somewhat of the military. And, answerable to this professorial regent or general are "Oberärzte" (colonels)*, "Secundärärzte" (majors), "Ersteassistenten" (lieutenants), "Assistenten" (noncommissioned officer), and "Volontäre" (volunteers), the number of each group depending on the size of the clinic and the inclinations of the chief.

In this unit, each man who has elected to follow surgery as a career works intently and earnestly, with no thought of the immediate future, succeeding through merit and accomplishment to each successive station. With the years, he masters all the diagnostic procedures and accedes to an enviable operative experience.

Despite the diversified interests in the field of general surgery, one finds in the German surgical clinics recognition of the fact that progress comes only through intensified effort and specialization. But the error too often committed in our own country of acquiring a special training before an adequate foundation is laid in a more general one, is rigidly and fundamentally avoided. Even though the character of the work in a clinic may, through the interests of its chief, take such a turn that it is referred to as a chest, urologic, goiter, or clinic of plastic surgery, the man of these special interests remains always essentially a general surgeon.

*The synonyms in parentheses are mine.

RESEARCH

Though considerable excellent research is being carried out in the British Isles, no premium is placed upon investigation by the English school of surgery. In Germany, on the contrary, investigation is made the incentive for advancement† in the clinic. This necessity or seeming compulsion to engage in research work is probably in no small degree responsible for the great volume of publications emanating from German clinics.

In order to qualify as "Privat Dozent" (instructor), the aspirant for an academic career in Germany must absolve the "Habilitationsschrift." This demands that the candidate submit to the faculty of the University original work demonstrating his ability to do investigation of a character deserving of recognition. This being accomplished, the continued performance of good work in the clinic, combined with a manifest interest and desire for investigation, coupled with reasonably good behavior, brings the promise of a professorship in a few years.

Once having acquired a professorship, even though its holder leave the university to engage in private practice, he still retains the title. If, every three years, he expresses a willingness to give a course in the department where the title was obtained, no matter whether any students accept the proposal and register for the course or not, there is no occasion for alarm concerning forfeiture of the appellation for another three years. Even though the prefix professor was won in the department of anatomy, its possessor, if he engages in the practice of surgery, is known as Prof. Dr. X, Surgeon.

Appointment as surgeon or physician to a municipal hospital in Germany is highly valued and much sought after.‡ Even though cherishing an ambition to succeed to the direction of a university surgical clinic, when pressed by the economic needs of a growing family, the bankrupt professor finds adequate consolation and solace in such a position. Here, he may follow his bent for investigation as freely as in the university clinic. Too frequently, however, the

†Competitive examination in France is an important criterion for promotion.

‡The occupant of this office is usually designated "Primarius." The duplication of X-ray and other laboratories found in the University clinics does not exist in the municipal hospitals.

sudden prosperity brought about through the acquisition of a large and lucrative private following, that often accompanies such an appointment, chills the ardor of the scientific aspirations of the ambitious professor.

The same self-sufficiency characterizes the research in Germany as is manifested in the clinical training. The assistant attached to a clinical unit doesn't hesitate to embark upon a line of research that we are wont to feel belongs more correctly in the province of physiological chemistry or other pre-clinical science. When necessary, such an assistant may interrupt his clinical work for a year or more (a rather common occurrence) to apprentice himself to a laboratory to learn at first hand some technical procedure necessary in the solution of the problem he is investigating in the clinic.

This plan helps to bring to the clinic the advantage of the advances in other fields of endeavor and aids in effecting a correlation between discovered fact and its therapeutic or other practical application. One serious evil, however, lurks in this otherwise excellent scheme. The professor who assigns the subject for investigation may be totally incapable of exercising critical judgment on the results, and may be unable to evaluate the merits or recognize errors in the work. Consequently such work occasionally is lacking in that stamp of assurance, and goes begging for approval, which the work would sooner obtain were it the product of the combined effort and "team-work" of clinical and pre-clinical laboratories.

The bulk of investigation done in the German clinic partakes of that great influence that German pathology has had on medicine in general. With their extreme regard for thoroughness, it is not surprising to find that every specialty has its "Ergebnisse" in which are to be found exhaustive reviews and digests in which are linked and correlated the observations of others, with those of the essayist.

In England, the influence of systematic anatomy envelops the surgeon and his investigations. One would rather expect to find that the teachings of their brilliant physiologists had wedged their way securely into the thoughts of surgery. Custom and tradition here are, however, not easily set aside, but perhaps the experimental laboratory that Wilkie has so successfully established in Edinburgh is a herald of the extensions of the triumphs of physiology and experimental medicine into English surgery.

True to the precepts of their famous master, the illustrious John Hunter, the usual English surgeon finds greater comfort in recording his own observations unassociated with an analysis of the recorded studies of others. It is said that when John Hunter was challenged with ignorance of the classical languages by a certain Jesse Foote, his reply was, "I can teach Jesse Foote on the dead body more than is known in any language, dead or living."

HOSPITALS

The hospital system in Germany has been briefly sketched. I should like to dwell here a little on the general plan of the hospital buildings. As has been previously stated, each clinical unit is a hospital in itself. The Eppendorfer Krankenhaus at Hamburg, built about 45 years ago, has furnished in Germany the prototype for many others of its kind. The surgical, medical and other units are all split up into small pavilions, one to two-story buildings, where the patients are housed in a large ward of fifty to seventy-five beds. Most of the clinical divisions being very large (in our sense),† there may be as many as six to ten of these pavilions in a single surgical unit. Frequently, as in Hamburg, they have no direct communication with one another, necessitating the transport of an operated patient to his bed, even in the dead of winter, from the surgical pavilion. Often separating these structures, however, are beautiful trees, flower beds, and springs of flowing water, where the convalescent patient may bask in the sun, feast his eye on luxurious gardens, enjoy the fragrant atmosphere of a spring morning, and forget his troubles that brought him to the hospital.

More and more, however, these pavilions are being less frequently built. Whatever quality of beauty or comfort they may have possessed is being sacrificed to the greater convenience and lesser cost of service that the more compact multiple story (3-4) structure affords. Any one visiting the Rudolf Virchow Krankenhaus in Berlin on a beautiful morning in May or June may, in a way, share the regret that many of

†It would appear to be the ambition of many German clinics to make their unit a miniature army. Payr at Leipzic has between 500 and 600 beds under his supervision! And there are many others almost equally large. Ward visits by the chief on such services consist usually in seeing the cases that interest him or need his consultation. Complete "ward-rounds," if made, are usually somewhat of a marathon.

the Germans express on the passing of the pavilion hospital plan.

In many clinics in Germany, a keen and special interest in the lighting and arrangement of the operating theatre is in evidence. The operating rooms of the average university clinic are, on the whole, much larger than ours, and attached to each operating room are usually one to three smaller rooms, employed for the induction of anesthesia, scrubbing of the hands, and other preparatory procedures. The operating room itself contains generally only those essentials requisite to the performance of the operation. In most university clinics, there is still the large amphitheatre more fashionable in days of the past, where the chief, on the conclusion of his didactic clinic, could thrill the students with a demonstration of his boldness, or exhibit his skill with scalpel and needle.

In a few clinics, the operating tables, two to three in number, are all in the same room. In every clinic, a sharp distinction is made between "clean" and "dirty" cases. Infected cases are always operated in the small septic operating rooms set aside for this purpose.

Following the example of Heller at the St. Georg Krankenhaus in Leipzic, the employment of dull blue drapes, instead of the conservative white, to diminish the reflection of light, has come into fairly general use. In several hospitals, a complicated series of overhead mirrors are employed to utilize the sun's rays to the best advantage in the lighting of the operating theatre. In this manner, a well-lighted room, without the blurring effect of direct sunlight, is obtained.

Operating usually without the aid of artificial light, the German surgeon enters the operating theatre, and usually only removes his waistcoat, dons a heavy rubber apron and heavy boots, and does the most trying operative procedures in his stiff shirt and stand-up collar, and rarely perspires. Their operating rooms, however, are somewhat cooler than ours, and, being larger, the humidity doesn't become as great. These latter facts are also attested in the behavior of the patients. Rarely does one see there, after a prolonged ether anesthesia, the gown of the patient drenched with profuse perspiration, as may so frequently be seen in our own clinics.

Aside from the fascinating tradition with which many of the London hospitals are replete, perhaps the most interesting feature of their hospitals is the collection box that can uniformly be found in a prominent place outside and in several inside, begging contributions of money or tinfoil necessary for the execution of obviously needed improvements.

In London are to be seen many small special hospitals, very modest in appearance and equipment, but universally known for the excellence of the work done there. St. Peter's Hospital for Stone, with only thirty-two beds, is famous for the character of its urological work. Here Freyer did his pioneer work in surgery of the prostate. St. Mark's Hospital for Rectal Diseases, to which a new addition has recently been built, can boast of a Salmon and two Allinghams, physicians of the past who, by their pioneer work in diseases of the rectum, have shed glory on their hospital. At the Gordon Hospital for Rectal Diseases, of thirty beds, equally as good work may be seen.

In England, the large private hospitals do not exist, private patients being cared for in small nursing homes.

Though, in many of our states, there are as many or more physicians in proportion to the population as in European countries, the opportunities for private gain in general practice are much better in our western states, at any rate, than in the British Isles or on the continent. The widely disseminated health insurance and "panel" system of medical practice makes for a proportionately small group of strictly private patients. In consequence, measured by our standards, their free hospitals are much more numerous.

In Copenhagen, truly socialistic medicine is in full sway. At the Rigshospitalet* anyone in Scandinavia can come and get the best of care for a most modest hospital fee, without incurring a pecuniary debt to the physician. The physician cannot ask a fee of the patient, but the latter may, if he desires, manifest his gratefulness by presenting his physician with a gift. There being no obligation on the part of the patient to do so, this demonstration of appreciation is usually omitted. There are, of course, also private hospitals in Copenhagen. I think it would be safe to venture the conjecture, however, that private practice is not an eminently successful enterprise.

*The Rigshospitalet, where the late Rovsing worked, and the Bispebjerg, are two of the finest hospitals in Europe.

The European standard of nursing differs a good deal from our own. Certainly in no country does the hospital patient obtain the individual attention that the ward patient enjoys in our hospitals. The German nurse is frequently lacking in any serious preliminary education, but combines in sympathy of heart and industry of body the qualifications that their clinicians prize as the essentials for those who tend the sick. Many of their men who visit our hospitals express surprise that our nurses should "paint and powder" and enjoy the privileges of social intercourse with other mortals. The day is long past when the assumption of a serious mien was the true indication of the earnest Christian, or a frank necessity for the preacher of the gospel. Neither should there be need for such hypocrisy in the field of nursing.

SURGERY

What of the surgery? It would take us too far afield to discuss in more than the most superficial manner the commonly practised operative procedures. Certainly, it can be said that there is no typically European surgery. Where in our country are there any two clinics that place the same emphasis in practice on asepsis, hemostasis, the avoidance of unnecessary trauma to tissue, time and other factors in operative technic?

If one were to generalize at all, one might say that the surgery of Germany, on the whole, has a tendency to be radical, that of England conservative, and that of France brilliant but provincial.

The visitor in Paris, I am certain, often wonders how their surgeons manage to operate with gloves as thick as those worn by our pathologists doing necropsies. Then their dexterous employment of the Reverdin needle (scarcely ever seen in use elsewhere) is often astounding.

Certainly, in England one sees developed to its best that interest in the patient that we refer to as a "surgical conscience." The question of which procedure will best suit the individual case receives deliberate consideration. Excepting the enthusiast, one rarely sees here a surgeon's fervor for a given procedure influence him to perform it without adequate indication.

ANESTHESIA

In England, where a general anesthetic is always given by a physician, the anesthetist figures prominently in every operation. Nowhere can one see ether more skillfully administered than here. For intratracheal anesthesia, automatic control machines are in general use. Local anesthesia for general surgical procedures is rarely to be seen in the British Isles; ethyl chloride, nitrous oxide, ether and chloroform constitute the usual anesthetic armamentarium of almost every operating theatre.

In France and Germany, local anesthesia receives general application. First received with favor following its introduction more than forty years ago, then practically abandoned, spinal anesthesia is once more becoming popular.

In northern Germany especially, avertin (tribrom ethanol) anesthesia enjoys wide use in many clinics. It is given in aqueous solution as an enema about half an hour before operation. Those who have had the widest experience with the method do not attempt to induce complete anesthesia with the drug. To secure complete relaxation for abdominal surgery with avertin alone would place the respiratory centers in grave jeopardy. For extremity surgery, this incomplete anesthesia with avertin seems quite adequate; when operating in the abdomen, reinforcement of incomplete avertin anesthesia with a small amount of ether is necessary. Something to be said in favor of the method is that anesthesia may be induced in bed without the patient's knowledge—a great advantage in certain cases.

Another drug intended to supplant inhalation anesthesia in use is pernocton, a barbital preparation. The drug is injected in a few c.c. of solution intravenously, into a vein of the forearm, and after a few seconds the patient is unconscious—a very impressive sight for the observer. Safety indicates that no attempt be made to secure complete anesthesia with pernocton alone. A fairly large number of deaths have resulted from both avertin and pernocton anesthesia, when this rule has been ignored. Of the two drugs, avertin has received more general approbation and enjoys continued wide usage as the safer anesthetic agent.

ASEPSIS

As one would expect in conventional England, a uniformity of practice exists with reference to the regard for asepsis. No vestige remains today of that long and stubborn opposition to the

introduction of Lister's principles, the greatest boon that surgery has ever known.

In German clinics, as in other matters, every man is a law unto himself. Every gradation, from an almost total disregard for the generally accepted importance of asepsis to the most painful precision in the preparation of the hands and the operative field, is in evidence. Surgeons may be seen to operate with sleeveless gowns, without masks or caps, without gloves, or with cotton gloves drawn over the usual rubber. And thus with every detail of the technic. In France or Italy, one is likely to see "breaks of sterile technic" far more commonly than in our hospitals.

SURGICAL TECHNIC

The control of hemorrhage by the initial ligature of the blood supply to the field of operation, wherever feasible, is the keynote of German operative technic. This principle is so thoroughly a part of the German surgeon that it is not surprising to see him ligature the four thyroid arteries before making a direct attack upon a goiter or even ligate both internal iliac arteries when doing the combined abdomino-perineal excision of the rectum. With his ligature carrier, he encircles each vessel that requires division and cuts between. The ordinary hemostat is used only to catch bleeding points where a preliminary ligature of the vessel cannot be effected. At any one time, therefore, the number of hemostats in use during an operation is very small.

Silk is largely relied on for suture material and ligatures as well. The continuous suture is rarely seen. When using catgut, whether for ligature or suture, the same employment of a more than generous length, which, when tied, necessitates the wasteful discard of two comparatively long strands, may be universally observed.

In the various provinces of general surgery, one may see in German clinics excellently executed operations performed most everywhere. In the field of gastric surgery, with special reference to duodenal ulcer, one is likely to find the common surgical practice at variance with that generally observed in our own clinics.

In the surgical clinics, at any rate, one hears no mention of the spontaneous or induced healing of ulcers on medical management, and gains the impression that the diagnosis of ulcer constitutes an indication for removing a good portion of the stomach, whether the lesion be in the duodenum or stomach. The frequency with which one may see a partial gastrectomy done, when to the disinterested observer no convincing gross evidence of a lesion is apparent even after the excised specimen is laid open, is an indication of the ardor and a measure of the enthusiasm with which this excellent operation is sometimes adapted to the patient. The quality of the gastric surgery in Germany and Austria, however, is on a very high plane, and nowhere, perhaps, can one see gastric resections done, from clinic to clinic, with such uniform skill.

Not all the German clinics, however, have accepted gastric resection as the operation of choice for duodenal ulcer. Among those who still maintain faith in gastro-enterostomy as a remedy for duodenal ulcer are to be mentioned the clinics of Professors Küttner at Breslau, and Hochenegg at Vienna, both of whom, by a study of their operated cases, find the results so satisfactory as to warrant continuance of the practice. Professors Guleke of Jena and de Quervain prefer to do an anterior gastro-enterostomy coupled with an entero-anastomosis when operating for duodenal ulcer.

The stoneless gallbladder is much less frequently removed in German clinics than in our country. In this particular, their surgeons find us equally as radical as they are in the field of gastric surgery. The persistence of symptoms in a definite percentage of cases, following the removal of a diseased gall bladder, they feel does not warrant the extension of the method to "prophylactic removal of the gallbladder to obviate stone formation."

There is an increasing tendency in Germany toward conservatism in the treatment of bone and joint tuberculosis. In many clinics, practically all cases are treated by heliotherapy, and the other adjunctive measures, with only infrequent recourse to surgical fusion operations.

Skeletal traction in fractures of the lower extremity has completely supplanted skin traction with adhesive tape in German clinics. The Steinman nail and calipers are everywhere in vogue. More recently, Kirschner of Tübingen has devised a method of piercing the tibia or femur with an electrically driven fine but strong piano wire.

Germany is lacking in the number of keen exponents of neurologic surgery that we have in

our country, and in the surgery of the brain, at least, a lack of development parallel to that present in general surgery as a whole, is generally conceded. At Breslau, Prof. Foerster, an organic neurologist by training, who has acquired the art of surgery, represents a new spirit in neurologic surgery. Emboldened by a thorough knowledge of the physiology and anatomy of the nervous system, he is launching an attack on diseases which affect it that previously, by common consent, were tendered the neurologist for diagnosis, observation and whatever comfort he could bring the patient.

This invasion of the province of surgery by the internist has long had its precedent in Germany in the field of chest surgery. Disappointed with the results of conservative waiting in the treatment of adhesive pericarditis and pulmonary tuberculuosis, Prof. Brauer, an internist of one of the medical divisions of the Eppendorfer Krankenhaus, long ago took over the surgery of these conditions as a therapeutic agent belonging in the repository of the armentarium of the specialist in diseases of the chest.

While still at Munich before taking over Hildebrand's post at the Charité in Berlin, Prof. Sauerbruch, convinced of the value of good nutrition in the treatment of tuberculosis, sent many of his patients with pulmonary tuberculosis to a special hospital at his disposal for a prolonged dietary preparation for operation. This principle, together with Hermansdorfer, he has already extended to other chronic infections, believing that the P_H of the inflammatory area may be influenced through diet.

Under the leadership of Gaza and Brandi now of Rostock, this principle has been adapted to the local treatment of suppuration, the wound being alkalinized when the discharges are acid and acidulated when alkaline.

The iniection of thrombosing solutions for varicose veins in the lower extremity has in many places practically superseded the operative treatment. In many clinics, simple hydroceles of the tunica vaginalis testis are treated, with good results, by the evacuation of the fluid and the injection of a drop of phenol into the sac.

Many of these measures would, on first thought, appear to be reversions to the order of procedures of subcutaneous surgery, practised when the safety of the open operation had not been firmly established. The safety and efficacy of these latter procedures, however, appears to be of established value.

One need not travel far from his accustomed sphere of activity to appreciate that even many of our apparently fixed principles may be subject to revision. Neither the science nor the art of surgery is free from the dogmatism or fads that affect other lines of endeavor; and the difficulty of separating the "wheat from the chaff" is frequently no light matter.

It is also difficult to escape the impression that surgery is constantly changing—even for one who has lived so few surgical summers as myself. The vain taunt so often expressed in the past that surgery, and especially its technic, has reached its pinnacle, finds utterance today. Fortunately, however, progress in our sister sciences quickly dispels this complete satisfaction with ourselves and our methods.

VALUE OF FOREIGN STUDY

It would be an omission were I not to say something of my impressions of the merits of foreign study. Thirty years ago, a medical training was incomplete without a period of foreign training. The increasing frequency with which the earnest European seeker after knowledge in medicine crosses the Atlantic to investigate our methods indicates the present high position of North America in world medicine. Today, it can truthfully be said that study abroad for the graduate of our schools is not so important, and certainly no longer indispensable. However, such study still constitutes an asset, the acquisition of which is very much worth while.

One who goes away expecting privileges or opportunities in foreign clinics that he cannot enjoy in his own is quickly disillusioned. The value of such study lies rather in the acquisition of knowledge of other methods and new ideas. A well-known English surgeon in a well-known London hospital told me one day that all he knew of surgery he had learned in his own hospital. From what I saw and heard from him, his statement may well not have been an exaggeration. The frequency with which our outstanding men of medicine make pilgrimages to foreign clinics indicates the value they place on an interchange of ideas. At the same time, it is an expression of their willingness to learn from others—a distinct mark of progressiveness. which, fortunately, manifests itself throughout our country in every activity.

DIAGNOSIS AND CLASSIFICATION OF THE VARIOUS FORMS OF BLADDER NECK OBSTRUCTION*

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ONE of the most important, and in many ways one of the most difficult, problems of urology is that furnished by obstruction to urination at the vesical neck. A large proportion of such obstructions are caused by benign hypertrophy of the prostate and are easily recognized. However, to think of prostatic hypertrophy as the only cause of the condition is to have a very distorted aspect of the problem.

A large minority of bladder neck obstructions are due to a variety of other causes not so obvious or readily recognized, but, nevertheless, quite as important as prostatic enlargement. At least to be aware of these other causes and to appreciate their importance is essential to any degree of proper dealing with the problem of bladder neck obstruction. In the actual handling of the condition it is only by recognition of the precise nature of the responsible lesion that serious blunder is to be avoided. Certainly it is a serious blunder to remove the non-obstructing prostate of a tabetic whose retention of urine is due to central nervous system disease. Likewise, when prostatectomy is employed against an obstruction due to a sclerotic bar or contracture of the vesical neck the patient is a victim of serious blunder. Other examples might be mentioned. Appreciation of only the gross and obvious aspects of the problem presented by these conditions is quite general and but few seem aware of the remarkable refinements and methods of precision which have been brought to it by modern urology.

Any anatomic change in the structure of the bladder neck or interference with its physiologic mechanism which prevents normally free passage of urine through it constitutes a bladder neck obstruction. The condition usually results in retention of urine in some degree, though this is not a necessary accompaniment of the condition.

The following classification of bladder neck obstructions is submitted:

CLASSIFICATION OF BLADDER NECK OBSTRUCTION

I. EXTRINSIC CAUSES
   1. Bladder tumors
   2. Vesical calculi
   3. Foreign bodies

II. INTRINSIC CAUSES
   A. *Disturbances of Innervation*
      1. Central Nervous System
         a. Functional retention
         b. Diffuse lesions
         c. Localized lesions
      2. Peripheral Nerve Lesions
      3. Atony of bladder (myoneural?)
   B. *Anatomic Change*
      1. Inflammatory
         a. Cystitis vesicæ colli (female)
         b. Acute prostatitis (male)
         c. Contracture of the vesical neck
         d. Prostatic calculi
      2. Neoplasm and Pseudo-neoplasm of of Prostate
         a. Benign
            1. Lateral lobe
            2. Bar
            3. Mid-lobe
            4. Collar
            5. Albarran lobes
         b. Malignant
            1. Carcinoma
            2. Sarcoma
      3. Hypertrophy of Trigone

First of all, we may divide the conditions into those of extrinsic cause and those of intrinsic cause. The former do not involve a change of structure in the bladder neck or a disturbance of its physiologic mechanism. They are merely interferences with this mechanism by an outside cause. They are clinically important, and when the cause of obstruction is not obvious they should always come up for consideration. They are readily excluded by cystoscopy and when borne in mind present little difficulty in diagnosis. As examples of such extrinsic cause may be mentioned foreign bodies and calculi lodged in the vesical neck (Fig. 1). A recent experi-

*Presented before the Annual Meeting of the North Dakota Medical Association, Devil's Lake, N. D., May 24, 1928.

ence provides another example. The individual had partial retention of urine. On rectal examination an enlarged prostate was found. Cystoscopy disclosed a large papillary bladder tumor, attached just beyond the vesical neck and so situated that it could readily fall over and occlude the internal meatus. Following destruction of the tumor there was complete emptying of the bladder with disappearance of all symptoms, it being apparent that the hypertrophied prostate was in no way responsible.

More important are intrinsic causes. They are very often by no means obvious and frequently present difficulties which make demands on the best refinements of urologic diagnosis.

The intrinsic causes may be divided into those due to disturbances in the innervation of the bladder sphincters without any pathologic alteration of structure in the bladder neck itself, and into those where pathologic change in the vesical neck and alteration of its structure are entirely responsible. Clinically, this differentiation between disturbances of innervation and anatomic change in the bladder neck is of prime importance. It will serve no good purpose to remove a slightly enlarged, non-obstructing prostate from a middle aged tabetic whose retention of urine is due entirely to a disturbance in the innervation of his bladder sphincters. On the other hand, a tabetic with neither an enlarged prostate nor disturbance of sphincter innervation whose retention is due to bladder neck contracture may be saved from death in uremia by the very simple procedure of a punch operation.

Disturbances of innervation may be broadly divided as indicated in the classification submitted.

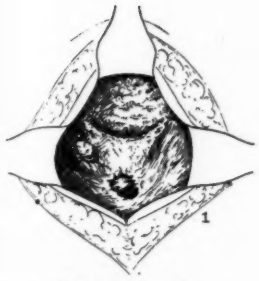
Cases of purely functional retention are by no means uncommon. In these cases there is neither anatomic change in the structure of the bladder neck nor a lesion of the neurologic mechanism controlling it. The retention is due to a purely functional disturbance of innervation. The underlying cause of most of these is obscure. Many of the so-called post-operative retentions are due more to morphine which has been given than to the operation itself. It can be shown experimentally in animals that morphine greatly increases the tone of the internal vesical sphincter and that the intravesical pressure required to make it yield is much higher than when the drug has not been given. True post-operative retention probably results from dysfunction of nerve centers concerned in the mechanism of involuntary sphincter control, and appears due to prolonged and intense afferent stimulation reaching the segment of cord in which they lie.

Retention of urine due to organic central nervous system disease is relatively common. The exact nature of the disturbance in micturition will depend on the manner in which the several factors concerned in the complex mechanism are affected. The lesion may affect either the sensory or motor path and may disturb any of the four muscles chiefly concerned: the detrusor, the trigone, the internal sphincter, or the external sphincter (Fig. 2). Tabes dorsalis is the commonest organic disease of the central nervous system producing retention. Other diffuse lesions which may be responsible are syringomyelia, encephalitis, and cerebro-spinal meningitis. Retention also occurs in certain psychoneurotic states, many of which, however, would be properly classed as functional retentions. Among the segmentally localized lesions of the cord frequently responsible for retention of urine are transverse myelitis, neoplasms, and fractures of the spine.

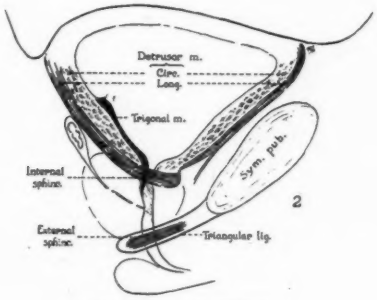
Peripheral nerve lesions as contrasted with central nervous system lesions, causing disorders of micturition, are seen chiefly in the results of trauma, surgical or otherwise. Incontinence rather than retention is most frequently the result. Surgical procedures in the pelvis and fractures of the pelvis injuring nerves above the triangular ligament and external sphincter may be productive of retention.

There is a condition of so-called primary atony of the bladder. The bladder muscle fibers are atrophied, the wall is of paper thinness, and there is enormous capacity. The atrophied trigone is incapable of opening the internal sphincter which though of poor tone is still competent. It seems most probable that such changes are ultimately of neurogenic origin. In the absence of other clinical evidence in support of nervous system disease the cases are designated "atony of bladder."

Obstructions due to actual anatomic change in the bladder neck constitute a large majority. These may be divided into those of inflammatory or post-inflammatory origin and those of neoplastic or "pseudo-neoplastic" origin. The particular types in each group are indicated in

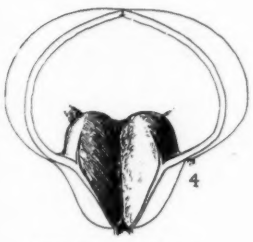


Bladder neck obstruction
Extrinsic cause: stone obstructing internal meatus

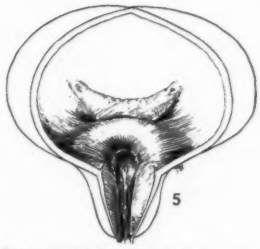


The muscles concerned in micturition

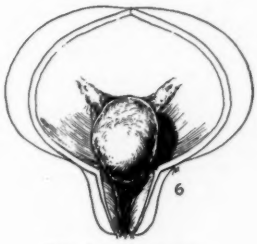
Acute prostatitis:
Inflammatory swelling at vesical neck



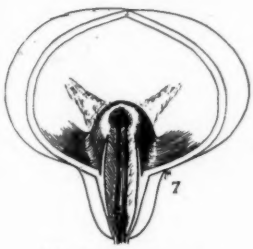
Benign hypertrophy of prostate:
lateral lobe enlargement



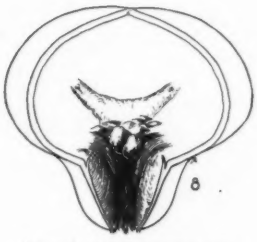
Benign hypertrophy (and cicatrization?) of prostate:
median bar



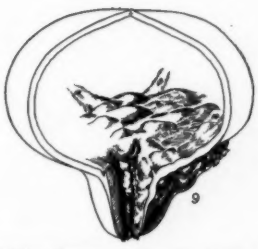
Benign hypertrophy of prostate:
mid lobe enlargement



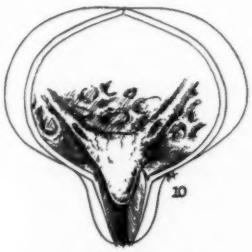
Benign hypertrophy of prostate:
collar enlargement



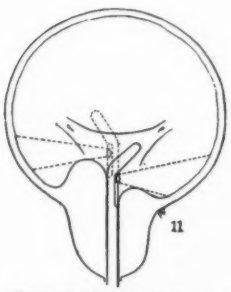
Hypertrophy (adenoma) of sub-trigonal glands



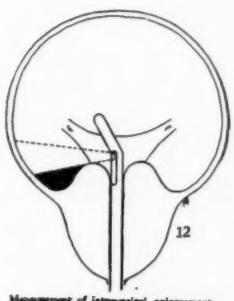
Neoplasm of prostate: adeno-carcinoma, extensive



Hypertrophy of trigone



Measurement of intravesical enlargement
Lateral cystoscope is introduced to one side of projecting lobes



Measurement of intravesical enlargement:
the "observed zone" of bladder wall

Figs. 1 to 12

the classification. During the acute stage of an inflammatory process the obstruction is due to edema of the mucosa and deeper structures at the bladder neck (Fig. 3). The post inflammatory obstructions result from cicatrization and contraction, the internal sphincter becoming fixed in scar and the meatus contracted. Calicification may occur in the infected prostate. Occasionally, as in the case illustrated, such stones may completely replace the gland (Fig. 13).

Hypertrophy and neoplastic disease of the prostate are the most frequent of all causes of bladder neck obstruction. Clinically they are the most obvious. For the purpose of serviceable clinical classification we may divide the benign enlargements of prostate on the basis of their gross morphologic character as indicated in the classification submitted (Figs. 4-8). Proper recognition of this is essential to selection of the surgical procedure to which the condition is best amenable.

Malignant tumors of the prostate are carcinoma and sarcoma. Carcinoma is much the more frequent, sarcoma being something of a curiosity. Carcinoma arises from epithelial elements of the prostate. Geraghty pointed out that in the usual clinical case the tumor begins in the posterior lobe. Its infiltrating growth produces a firmly fixed, dense, and irregular lamina across the posterior aspect of the prostate with infra-vesical extension in the direction of the vesicles, and obliteration of the median furrow between the two lateral lobes (Fig. 9). This character of growth distinguishes the condition from the encapsulated, globular, and smooth benign enlargements. Occasionally the tumor arises as a carcinomatous change in an originally benign adenoma of a lateral lobe. Such growths are occasionally found on sectioning removed glands which were typically benign clinically. They do not give a high incidence of recurrence but such cases do not describe the usual clinical case of carcinoma of the prostate mentioned above. Sarcoma arises from smooth muscle, is very rapid in its growth, and produces very large infiltrating growths which may fill the whole lower part of the pelvis.

Hypertrophy of the trigonal muscle is common. It occasionally reaches degrees causing obstruction. It probably represents an hypertrophy of over-use caused by bladder irritation. The anatomic result is a condition similar to prostatic bar (Fig. 10).

More rare and bizarre causes of obstruction, such as echinococcus disease of the prostate, hypertrophy of the verumontanum, and congenital valves, have not been included in the classification and are not considered.

The clinical diagnostic problem presented by

Fig. 13. Plain urinary tract x-ray, bladder region. Complete calcareous replacement of prostate. Note separation of shadow into mid-lobe and two lateral lobe portions.

these cases has two aspects: first, proper recognition of the type of bladder neck obstruction, together with exact determination of the lesion responsible for it; second, appraisal of the damage, if any, to the patient's general condition resulting from the bladder neck obstruction. As to the second aspect, only a few salient points will be mentioned. In every instance determination of blood urea nitrogen and creatinine, and phthalein excretion should be made. The presence or absence of accompanying upper urinary tract infection may be determined by examinations of ureteral catheter specimens of urine. Obstructions which have caused temporary or permanent damage to renal function are accompanied by urine of low specific gravity. The heart and vessels and blood pressure values are to be determined. Serious departures from nor-

mal are to be expected in cases of obstruction of long standing and their exact appraisal is an important item in the clinical examination of such patients.

Determination of the nature of the bladder neck obstruction and proper recognition of the responsible lesion may now be considered.

The symptoms caused by a bladder neck obstruction will, of course, be conditioned greatly by the exact nature of the obstruction and the pathologic process producing it. For this reason careful inquiry into the history is important and valuable leads for the physical examination to follow are thus obtained.

HISTORY

A history of neurologic disturbances in general should always be looked for. A marked difference in the urinary symptoms can usually be drawn between the cases due to disturbances of innervation and those due to anatomic change. Disturbances of innervation are usually accompanied by some degree of bladder anesthesia but rare lesions affecting only motor paths exhibit no anesthesia.

A history of gonorrhea or, more important, post-gonorrheal prostatitis with persisting "morning drop," perineal discomfort, et cetera, are almost regularly obtained in cases of bladder neck contracture in men. In women the similar condition has usually been preceded by oft repeated attacks of acute urethritis and "cystitis." Those due to active inflammatory change are usually marked by recent infection and their acuteness.

The typical history of gradually developing symptoms of benign prostatic hypertrophy is characteristic. The following occur in order: nocturia, increasing daytime frequency, hesitancy, diminished stream, dysuria, complete retention, overflow incontinence. However, an enlarged gland may cause no residual urine and no symptoms for a long time and then suddenly cause complete retention. Complete retention is most likely to be precipitated by some excess: over-eating, over-drinking, sexual excitement, exertion or exposure. The course of symptoms will be influenced by the presence or absence of infection and the occurrence of one of two reactions to the obstruction on the part of the bladder: hypertrophy or atony. With infection, irritative phenomena become exaggerated, there is extreme frequency, urgency, dysuria, and terminal pain. Even without infection these may occur when marked concentric hypertrophy of the bladder has been established. If the bladder reacts to the obstruction by becoming atonic, due to prolonged over-distention, the individual may become almost unaware of his trouble but for hesitancy, slight frequency, and diminished stream until complete retention occurs.

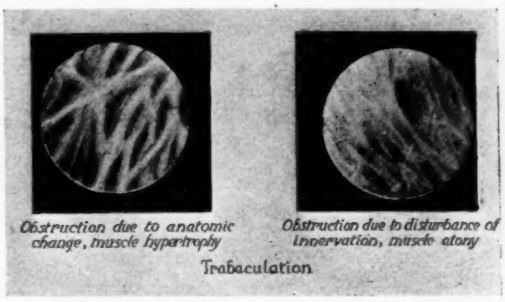

Obstruction due to anatomic change, muscle hypertrophy
Obstruction due to disturbance of innervation, muscle atony
Trabaculation

Fig. 14

With carcinoma of the prostate the usual obstructive symptoms are in the background, the condition being characterized more by dysuria, perineal pain, and pains referred to the back, pelvis, and lower extremities. Contrary to popular opinion hematuria is much more suggestive of benign hypertrophy than of carcinoma.

PHYSICAL EXAMINATION

The physical examination should disclose any of the grosser manifestations of central nervous system disease as shown by the reflexes, and coordination and sensation tests. A neurologic consultant may give valuable aid in such cases. The possibility of symptoms being due to neurologic disease must be borne in mind constantly.

It is important to determine the degree of bladder distention present and estimate the tension within it. A flaccid bladder under no tension though of enormous capacity may be emptied with impunity but not so a firm over-distended bladder under increased tension. It is much safer to gradually decompress such bladders.

Palpation of the urethra may disclose the infected peri-urethral glands or diffuse infiltration of a chronic urethritis. These are frequently found associated with inflammatory or post-inflammatory bladder neck obstructions and should be looked for in females as well as in males.

If there is a history of gonorrhea, particularly in younger individuals, the urethra should be explored. The bougie á boule will frequently find strictures and infiltrations. The bladder neck itself normally offers little resistance to withdrawal of the bulb but a contracture may give a firm tug.

The patient's act of urination is observed. He is instructed to completely empty the bladder. In cases of obstruction there is usually some degree of hesitancy in starting the stream. The size and force of the stream are noted. Even with well developed obstructions the first part of the stream, when the bladder has tone because of its filled condition, may be of good force. An abnormally prolonged terminal decrease in force is significant. After voiding to empty, a catheter is immediately passed. The presence of residual urine is an important finding but its absence by no means rules out obstruction, for if the bladder has reacted to obstruction by concentric hypertrophy the powerful trigone may be capable of pulling open the obstructed vesical neck and the well compensated detrusor may force complete evacuation.

Much is learned from the rectal examination in men and vaginal touch in women. Obstructions due to cute inflammatory change produce tenderness to pressure on the prostate, and in women tenderness to pressure against the bladder neck. With the post-inflammatory contractures in women, an infiltrated urethra and palpably thickened bladder neck may be felt. This condition in men is usually associated with a small, somewhat irregular prostate which lacks the normal resilience and is well described as "gristly." There may be no palpable abnormality of the gland or only slight thickening across its base.

Benign enlargements of the prostate may be almost entirely intra-vesical and give little or no enlargement palpable by rectal examination. In most cases, however, some degree of enlargement is apparent by rectal examination. The gland is smooth, usually firm, but resilient. The globular lateral lobes form a sulcus to each side toward the pubic rami and between the two is a well defined median furrow covered by the uninvolved posterior lamina or lobe. The attachments are elastic and the gland is very slightly movable.

These characteristics on rectal examination usually sharply distinguish the condition from carcinoma and make of the rectal examination the most valuable item we have in differentiation of the two conditions. The typical carcinomatous gland is stony hard. The surface is irregular or even nodular. Distinct lateral lobes are not distinguishable and the median furrow between them is obliterated. The sulci between the gland and the pubic rami are filled out and obvious growth in these directions may be found. Fixation is so firm that no movement can be detected. The differential diagnosis between a carcinomatous gland and a benign enlargement in which infection and cicatrization have occurred may be difficult.

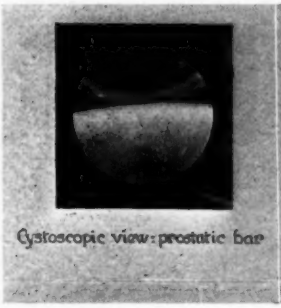


Fig. 15

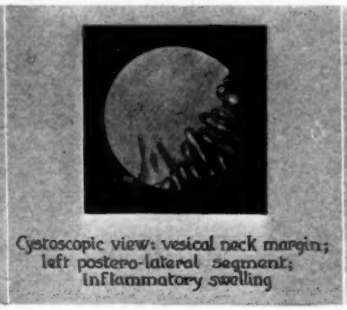


Fig. 16

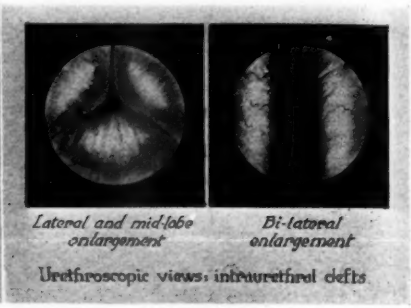


Fig. 17

CYSTOSCOPY

The chief value of cystoscopy is in the cases without residual urine and in those without obvious benign enlargement of carcinoma. Cystoscopy is useful, too, in recognizing the intrinsic causes of obstruction and complicating

conditions such as stones, tumors, and diverticula.

On introduction of the instrument the rotation of the beak required for passing the prostatic urethra should be noted. An unusual rotation may be required in the presence of bulging lobes. The beak may catch under a bar or cicatrized posterior segment of sphincter. The elongation of the urethra can be measured. The firmness with which the sheath is held by the prostatic urethra and the extent to which its axis may be deflected is valuable information. Carcinoma and extensive cicatrization hold the scope firmly and interfere with its deflection.

Brief inspection will show the degree of atony or hypertrophy present. The atonic bladder has large capacity and is non-irritable; the hypertrophied one is often of small capacity and irritable. Either condition may result from obstruction due to anatomic change in the structure of the vesical neck but atony and large capacity speak for long duration or for a disturbance of innervation.

Trabeculation is spoken of as a criterion for recognition of the so-called "tabetic bladder." The typical cord bladder is of large capacity, atonic, and anesthetic, and exhibits a very delicate interlacing mesh of muscle bundles. This latter characteristic might be spoken of as trabeculation but it is very different from the trabeculation of hypertrophy (Fig. 14).

A systematic inspection of the bladder neck is

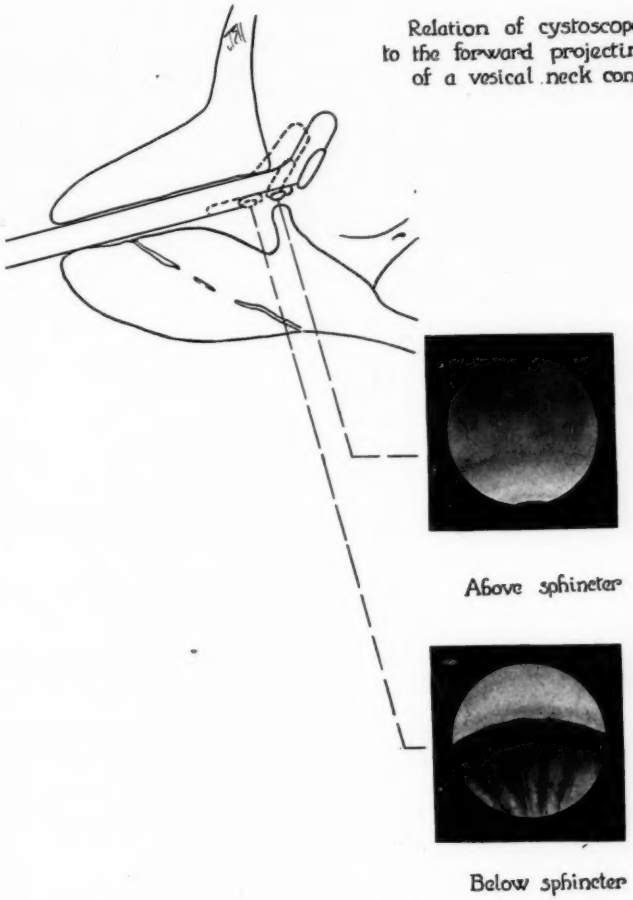


Fig. 18

made by rotating the fenestra of the instrument through its whole circumference. In so doing, the axis of the instrument should be kept perfectly straight. If there is an intra-vesical enlargement of the prostate present its extent and character can thus be determined. The degree of enlargement in the various quadrants is estimated by the distance the instrument has to be introduced to see over the summit of the projecting gland (Fig. 11). The projecting gland will cut off from vision a zone of bladder wall at the vesical neck (Fig. 12). The different lobes may be demarcated by clefts between them and the extent to which each one is enlarged thus becomes evident. From the views obtained in different quadrants a composite picture may be constructed.

A pure bar hypertrophy stands out as a prominent ridge across the posterior segment usually high enough to obscure the fore part of the trigone (Fig. 15). It blends with the lateral lobe portions to each side and unlike true midlobe enlargements there are no clefts at these points.

Hypertrophied Albarran glands may project up from the trigone or into the posterior segment without enlargement of lateral lobe portions.

It is always well to determine the extent of intra-urethral enlargement as this may be the chief factor in obstruction. The depth of the clefts between the lobes is the criterion here (Fig. 17).

The normal bladder neck presents a perfectly smooth mucosa exhibiting no edema and as the instrument is drawn into the urethra it is seen to have a gently rounded sphincter margin. In obstructions due to active inflammatory processes the mucosa is thrown into polyp-like folds by edema, it is reddened, appears spongy, and bleeds readily (Fig. 16). The same changes, lacking only the intense hyperemia of the acute process, are seen in the chronic infiltrating urethritis and "cystitis vesicæ colli" of females.

Contracture of the vesical neck may be very difficult to recognize (Fig. 18). The bladder neck is perfectly flat and no zone of bladder wall is obscured. The sphincter margin which should be gently rounded is acute and hugs the instrument closely. A narrow rim-like elevation can sometimes be made out just at the margin of the meatus. On drawing the instrument down into the urethra it is possible to look back into the floor of the urethra under a forward projecting web of posterior bladder neck. In this condition the patent orifices of stiff and sclerotic prostatic ducts, the result of an old prostatitis, are frequently seen.

With disturbances of innervation a pronounced relaxation of the internal sphincter frequently occurs. No sphincter margin can be made out and the bladder neck appears as a funnel with posterior urethra and bladder in open communication.

By critical attention to the facts of a well taken history, by careful appraisal of physical findings with especial reference to the urinary tract, and finally by the findings of a competent cystoscopy it is almost invariably possible to positively and correctly assign the cause of trouble. Only when this has been done can intelligent and proper treatment be undertaken. To proceed otherwise is to subject the patient to the risk of serious blunder.

DISCUSSION

DR. V. J. LA ROSE (Bismarck, N. D.): Dr. Foley in his excellent paper has so well covered all the causes of obstruction of the bladder neck that anything I could say would be superfluous.

I wish to call attention, however, to a few conditions the general practitioner meets with in acute retention. Obstruction is the prime factor in retention at the bladder neck. There may be obstruction but if there is no retention of urine it is not nearly as serious as when the retention develops with back pressure on the kidneys, which interferes with their function to a greater or lesser degree. The relief of acute retention is a problem for the general practitioner, for many men who are doing general work are called in to take care of cases of acute retention as an emergency, and it is well to bear certain points in mind.

The relief of acute retention, to my mind, is always a serious problem. While there are conditions in which retention may be relieved by emptying the bladder completely by catheterization, there are other conditions in which sudden or even partial emptying of the bladder is serious, and sudden death has occurred in these cases. As Dr. Foley brought out, the history and physical examination are very important. In males in the forties who have a history of infection, gonorrheal or what-not, with prostatitis, the condition will usually be one not of hypertrophy of the prostate but of contraction of the bladder neck due to the infiltration following the long continued infection, while in the fifties and sixties and so on the retention is more likely to be due to enlargement of the prostate.

We should not forget, as Dr. Foley also emphasized, that we have these bladder neck obstructions in the female as well as the male. We must not overlook these. In cases of acute obstruction in which you attempt to pass a catheter, if obstruction is due to a nerve lesion there is usually not much trouble in catheterizing, owing to anesthesia of structures at the bladder neck. In malignant conditions and hypertrophy of the prostate there will sometimes be great difficulty in passing a catheter, and the patient will often complain very bitterly. In this way we can form an opinion as to the existing cause of obstruction. We should be careful not to traumatize the urethra. If the catheter does not pass easily we should not force it in, for sometimes we make a bad matter much worse.

I think the safest procedure in emptying the bladder, if you are successful in passing the catheter, is to leave it in, fasten it with adhesive strips, and gradually empty the bladder. You can put a little plug in the end of the catheter and advise the attendant to draw off a small medicine glassful of urine every hour or so, or allow it to drip slowly, and in that way gradually empty the bladder. The most dangerous case is usually that of a man who gives a history of gradually oncoming trouble, difficulty in passing urine, the stream becoming smaller, and so on. These patients usually carry more or less residual urine, resulting in increased pressure in the kidneys, and sudden relief sometimes works great harm, even to the onset of uremia with a fatal outcome.

Dr. Foley (closing): I am most appreciative of Dr. La Rose's discussion. Attention was called to the use of the indwelling catheter for constant drainage. Dr. La Rose advised leaving the catheter in place the first time it is inserted, particularly in cases where its passage is difficult. Keeping an indwelling catheter fixed in the urethra is often a difficult matter. If it is causing irritation the uncoöperative patient will pull it out; disoriented patients almost regularly do so. A redundant prepuce, phimosis, balanitis, et cetera, may make the usual fixation with adhesive impossible under any of these circumstances. A trick procedure which I recently devised may be employed with assurance that the catheter will remain fixed in place and that the patient can not remove it. It is best to use an old catheter which has been softened by repeated boiling. It is passed in the usual way and advanced well up into the bladder. The penis is retracted back along the shaft of the catheter, the latter being held in place by pressure with the thumb in the perineum against the pubic arch. The catheter is then cut across at the meatus. As the retracted penis is released the end of the catheter slips up some distance in the pendulous urethra. The urine is allowed to drain from the meatus into a urinal placed between the patient's thighs.

PRELIMINARY REPORT OF A NEW AND SIMPLE TECHNIC FOR LIPIODOL INJECTION OF THE UTERUS*

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and
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DURING the past two years lipiodol has been rather frequently used at this hospital as an aid to establishing the diagnosis in doubtful female genital conditions. Cases have been carefully selected before injection of the iodized oil into the uterine cavity and patients with acute inflammatory disease are never subjected to the procedure, but rather those with chronic complaints in whom pelvic pathology is either not demonstrable or the degree uncertain upon bimanual examination. Certain other cases, such as patients complaining of sterility and some with uterine myomata, have been subjected to the test merely to demonstrate, if possible, patency of the Fallopian tubes in the former and encroachment upon the uterine cavity in the latter, if the myomata be of the submucous type.

Variations in technic of this simple operation have been described by others from time to time. Simplicity is the end toward which we have striven.

The first method employed by us was more cumbersome than that now used. The operator exerted some traction upon a tenaculum placed in the anterior lip of the cervix while a Rubin's canula, the tip of which, up to the rubber stopper, was inserted into the cervical canal and pressed upon firmly from below. By this combined traction on the cervix and pressure upon the canula to hold the stopper tightly in the cervical os, all backflow of lipiodol into the vagina was prevented. The roentgenograms taken following

Fig. 1. Roentgenogram showing old technic with speculum, tenaculum and canula in place. Upper border of uterus distorted by tip of canula. Complete occlusion of tubes.

Fig. 2. Roentgenogram showing new technic with no instruments except retention catheter in place. Normal patent Fallopian tubes.

*From the Obstetrical and Gynecological Service of the Minneapolis General Hospital.

the injection of the lipiodol into the uterine cavity showed both the canula, tenaculum, and speculum as well as the distribution of the lipiodol. Not only were these instruments superfluous when seen in the *x*-ray plates but occasionally one saw the contour of the uterine cavity distorted by the tip of the canula (Fig. 1). This was particularly true when the depth of the uterine cavity was shorter than normal and in uteri where a marked anteflexion was present.

The technic we now follow permits us to discard all accessories to the operation itself before the roentgenogram is made. Rubin's canula is no longer used. Instead, a rubber mushroom or retention catheter is inserted into the uterus by means of the regular mandrin used for insertion of retention catheters in urologic practice. The anterior lip of the cervix is held with a tenaculum for convenience while placing the catheter, but is released before the *x*-ray exposure is made. The catheter is then drawn down so that the bulb, or mushroom tip, rests firmly over the internal os. Lipiodol is then injected and the plates made (Fig. 2).

This method requires less time and gives equally as good results in most instances without the instruments being shown in the *x*-ray plates. In a few cases there has been a small reflux of lipiodol along the sides of the catheter into the vagina, but this occurs only in cases of multiparous women with more or less patulous cervices and has been noted also in similar cases where the technic employing the canula has been used. This condition may, however, be more easily avoided in this newer method described by simply selecting a catheter of caliber suitable to the degree of patency of the external os and cervical canal.

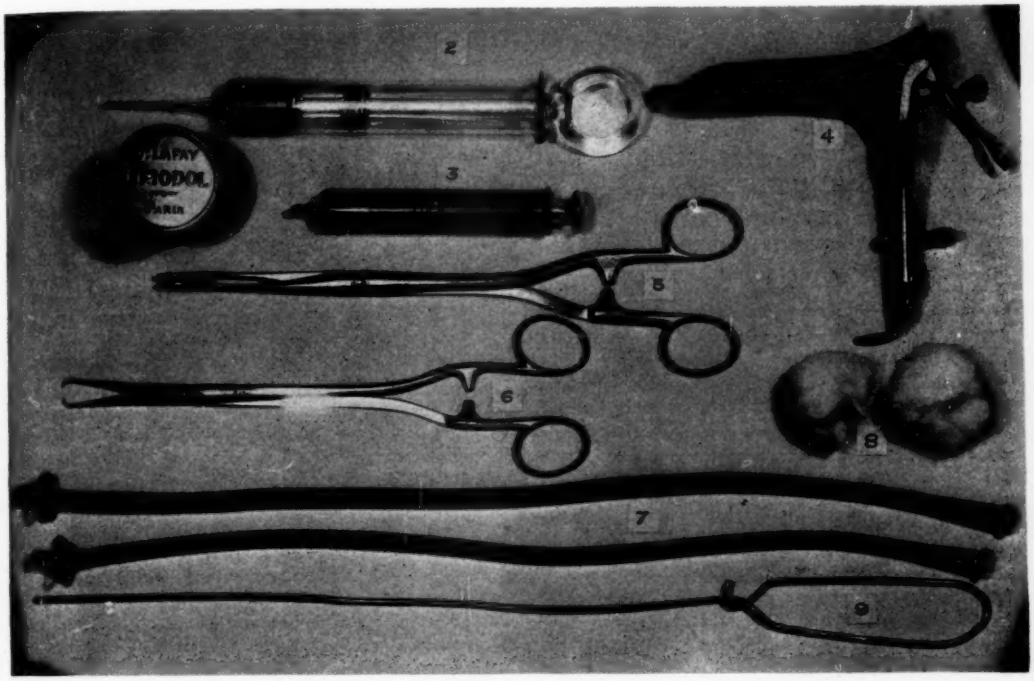

Fig. 3. Tray completely set up for lipiodol injection of uterus by the newer method. 1. Dr. LaFay's lipiodol. 2. Triumph syringe. 3. Luer syringe, 10 c.c. 4. Graves' speculum. 5. Sponge forceps. 6. Tenaculum. 7. Retention catheter. 8. Cotton balls. 9. Mandrin.

SUMMARY AND CONCLUSIONS

1. The method of employing retention catheters instead of a canula in lipiodol injections of the uterus simplifies the technic.

2. The contour of the uterine cavity is often distorted by the tip of a canula in acutely anteflexed uteri and in those which are smaller than normal.

3. Instruments are not visualized in the hysterogram to interfere with the more accurate

reading of the conditions represented in the picture.

4. A retention catheter is more easily accessible than a Rubin's or similar canula and therefore makes the procedure available to a larger number of physicians for aid in gynecologic diagnosis.

5. A tenaculum, retention catheter and a mandrin for the catheter are the only equipment necessary besides a speculum and syringe.

NARCOSAN AND DRUG ADDICTION

Narcosan is the "discovery" of one A. S. Horowitz, who came to the U. S. in 1913 and has been more or less continuously indentified with attempts to promulgate cures for all sorts of disorders. There was the Horowitz-Beebe treatment for cancer, known as "Autolysin," there were the Merrell Proteogens for the treatment of practically everything, and, finally, there was Narcosan, originally brought out about 1920 under the name "Lipoidal Substances." Lipoidal Substances was not accepted by the Council on Pharmacy and Chemistry, because it was of unestablished composition and the clinical reports were not convincing. In 1926 an article appeared on the subject of Narcosan, which paper had previously been rejected by The Journal of the American Medical Association. Since then sensational newspaper articles about Narcosan have appeared. Now a preliminary report of the Mayor's Committee on Drug Addiction of the City of New York has been published. It is signed by the chairman of the committee, Dr. Alexander Lambert, who was one of the authors of the favorable report on Narcosan published in 1926. The committee report is summed up in the closing clause: "Narcosan has no merit as a specific treatment of drug addiction." (Jour. A. M. A., January 12, 1929, p. 151.)

MORE INFLUENZA VACCINE PROPAGANDA

As might have been expected from previous activities of the firm, among the earliest to enter the field in an endeavor to promote vaccine products during the current influenza epidemic has been the G. H. Sherman Company of Detroit. In 1924 the Council condemned the firm's influenza vaccine, particularly because of lack of evidence in its support, and all of the mixed vaccines in general because their use is not in the interest of sound therapy and public health. The more recent literature circulated by Sherman includes the claim that records of Dr. Don C. Sutton, Frederick Tice, Alexander Lambert and William O'Neill Sherman constitute suitable evidence in support of the use of the prophylactic vaccine against this disease. Letters from Drs. Sutton and Sherman cast considerable doubt not only on the statistics and statements cited by G. H. Sherman in support of the use of his preparations but also on the right of that concern to use the material in advertising. For some years the products of G. H. Sherman have not been advertised in any of the publications of the American Medical Association and none stand accepted for New and Non-official Remedies at the present time. (Jour. A. M. A., January 26, 1929, p. 316.)

A REPORT ON FISHES FROM THE MISSISSIPPI RIVER AND OTHER WATERS WITH RESPECT TO INFESTATION BY *DIPHYLLOBOTHRIUM LATUM**

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IT has been demonstrated conclusively that the larvæ of *Diphyllobothrium latum* frequently occur in the flesh of certain game fishes taken from three lakes in northern Minnesota (Magath, 1927). Consequently, it is of importance to determine the degree and extent of infestation of fishes from all waters of Minnesota and adjoining states. I am, therefore, reporting data concerning fishes from the Mississippi River, taken between St. Paul, Minnesota, and LaCrosse, Wisconsin, the St. Croix River, Lake Mazaska (near Faribault, Minnesota), and Long Lake (near Ely, Minnesota). This is the first of a series of reports to be made dealing with this phase of the problem of the broad fish tapeworm.

The flesh of each fish was removed, cut in pieces of convenient size, and flattened between two pieces of plate glass. By means of transmitted light any larvæ present in the flesh could readily be detected. The results of the study are given in Table I.

The record in Table II, of infestation recently observed in Long Lake, is in striking contrast with the negative data just recorded.

The number of larvæ in these fishes ranged from eleven to sixty.

From these data it may reasonably be concluded that fishes from the Mississippi and its tributaries in this region are seldom, if ever, infested with the larvæ of *D. latum*. In my opinion it is not necessarily the failure of the ova of the parasite to reach these rivers, but rather the absence of the proper first intermediate host that may account for the lack of infestation among the river fishes. *Diaptomus oregonensis*, which acts as the first intermediate host of *D. latum* in Long Lake, is typically a lake form, as are most of the members of the genus. Those species of Cyclops which are more or less abundant in the rivers of this region fail to become infected with the oncosphere of *D. latum* (Essex, 1927). In view of these considerations it would

TABLE I

Fish	Size, cm.	Number examined	Source
Esox lucius (pickerel)	10 to 45	43	Mississippi river
Stizostedion vitreum (wall-eyed pike)	70	2	Mississippi river
Perca flavescens (yellow perch)	7.5 to 30	46	Mississippi river
Lepomis pallidus (bluegill)	10 to 12.5	2	Mississippi river
Ami calva (bowfin)	60	1	Mississippi river
Minnows	5 to 7.5	8	Mississippi river
Esox lucius	20 to 35	5	St. Croix river
Stizostedian vitreum	20 to 35	8	St. Croix river
Perca flavescens	15 to 20	4	St. Croix river
Micropterus salomoides (black bass)	20 to 25	3	St. Croix river
Perca flavescens	7.5 to 10	25	Lake Mazaska
Esox lucius	40 to 75	26	Spring Lake Park Rapids, Minnesota
Perca flavescens	7.5 to 22.5	48	Spring Lake Park Rapids, Minnesota
Total		221†	

TABLE II

Fish	Size, cm.	Number examined	Source	Number infected	*Diphyllobothrium latum* larvæ
Esox luscius	55 to 75	5	Long Lake	5	181

*From the Division of Experimental Surgery and Pathology, The Mayo Foundation, Rochester, Minnesota.

†Larvae of *Diphyllobothrium latum* were not found in any of the fishes examined.

be surprising to find a river fish infected with this parasite.

This report was made possible by the splendid coöperation of Mr. Canfield, U. S. Bureau of Fisheries, La Crosse, Wisconsin, and Mr. T. Surber, Minnesota Fish and Game Commission, St. Paul.

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SEMAFOR, A DENTOMEDICAL NOSTRUM

The Indicator Laboratories, Inc., Chicago, put out a preparation, "Semafor" that, it is claimed, "combats unpleasant Breath (Halitosis), Acidity, Mouth Infections (Sepsis), and Tooth Decay, by its Cleansing, Healing, Germicidal Action—and removes sticky film." Semafor is described as the "New *Red* Purifier that turns *White* when disorders lurk in mouth and throat." According to the analysis of the chemist of the American Dental Association Semafor is nothing more than a simple saline solution to which a little alcohol, sodium carbonate and an indicator in the form of phenolphthalein have been added. The selling point of Semafor is that of getting the public to believe that, if the diluted pink Semafor solution, when put in the mouth, is partially or wholly decolorized, the user is suffering from "acid mouth." The fact that normal saliva from perfectly healthy mouths is faintly acid in reaction makes it obvious that the vast majority of people who would use Semafor would find this solution partially decolorized. They will also find, as a matter of course, that if, at the time of using Semafor, they repeatedly rinse their mouth with this alkaline solution, with each rinsing the solution that is ejected will be nearer the normal Semafor solution color. This will further convince the public that their mouths are being "disinfected" although, of course, the product is not a germicide. (Jour. A. M. A., January 5, 1929, p. 73.)

"INFLUENZA SEROBACTERIN MIXED"—A REVIVAL

In 1918 the Council on Pharmacy and Chemistry denied admission to New and Non-official Remedies of "Influenza Serobacterin Mixed-Mulford," holding that there was no evidence for the value of the mixture and that its use was illogical. Since then nothing has happened to question the soundness of this judgment of the Council. Nevertheless, a circular letter sent to a large industrial concern conveys the impression that "Influenza Serobacterin Mixed" is an effective means of checking influenza and of treating respiratory infections. The apparent conviction by the promulgators of "Influenza Serobacterin Mixed" of the value of their preparation is not the slightest guarantee of their truth. This is merely an ill considered crude revamping of old notions and phrases, surviving in discredited advertising matter, and now revived during a period of public fears in time of epidemic (Jour. A. M. A., January 19, 1929, p. 233).

ACTEROL

Acterol (a preparation containing irradiated ergosterol), it is reported, has been withdrawn from the market by Mead Johnson & Co. until such time that further animal and clinical experimental studies shall have determined its therapeutic status. (Jour. A. M. A., January 12, 1929, p. 170.)

OBSERVATIONS ON THE USE OF POTASSIUM SULPHOCYANATE (RHODAN) IN THE TREATMENT OF ESSENTIAL HYPERTENSION*

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WHILE in Germany in 1926 I was so impressed by the results that were being obtained at the clinics there by the use of rhodan (potassium or sodium sulphocyanate) in essential hypertension, that I determined to give it a trial as soon as I should return home. On looking up the literature I found very few articles by American authors, most of them being by Germans.

The earliest experiments with rhodan seemed to have been undertaken by Paul[1] in 1903 with favorable results. He assigned to rhodan a sedative quality and an ability to lower blood pressure. He reports his results in the treatment of thirty-five clinical cases with one gram of sulphocyanate daily. He found the drug to exert a very satisfactory sedative action on the pain, vertigo, restlessness, insomnia, irritability, fear, palpitation, increased reflexes, tremors, etc., of neurasthenic conditions, cardiac neuroses, climacteric neurosis, tabetic pain, syphilitic headaches and similar conditions. In another class of cases exhibiting arterial hypertension, Pauli obtained marked reduction of blood pressure with relief of vertigo and other subjective symptoms. He noted various analogies between the action of iodides and sulphocyanate, even to the occurrence of a sulphocyanate acne and rhinitis. Among other things he noted the use of iodides to promote elimination of earthy salts and suggests that the beneficial action of the iodides and sulphocyanate in arteriosclerosis may be due to their power to remove calcareous deposits in the arteries.

In this country LeRoy and Bently[2] in 1908-1909 claimed that the sulphocyanates exert a solvent and eliminative action on the earthy salts, which action might be counteracted by excess of ammonia. On this basis they advocated the therapeutic use of sulphocyanate for the removal and elimination of calcareous and similar deposits in various degenerative conditions. These authors have used sodium sulphocyanate in the treatment of arterial hypertension with most satisfactory results.

Westphal,[3] at the Von Bergmannschen Klinik, has carried on extensive biological and clinical investigations on the use of rhodan compounds in cases of genuine hypertension, and reports very favorable results. Therapeutic tests with doses of rhodan of about 1.5–2 grams per day caused lowering of the arterial tension in 75 per cent of the cases treated. These larger doses proved unsatisfactory as they were associated with symptoms of intoxication of an inflammatory nature, with agitation, delirium resembling a psychosis, and great muscular weakness and fatigue. After extensive therapeutic experimentation, the proper dose was finally found to be one-tenth to four-tenths of a gram a day of potassium or sodium rhodanate. These doses did not cause such a distinct lowering of the blood pressure but the fluctuations of pressure, which are the chief factors causing complaints in hypertonia and which cause apoplexy, become much less frequent and intensive. The dangerous angiospastic condition of the brain expressed by transitory paralysis, severe vertigo, often associated with unconsciousness, in short, all the precursors and immediate causes of the apoplexy disappeared by treatment with small doses of rhodan energetically continued for some time. Very few of his cases proved to be refractory. The dosage was finally arranged in the following way: The first week 0.1 gram three times a day, second week 0.1 gram twice a day, and the third week 0.1 gram once daily, when the treatment was discontinued for one week, and then a new course started. In case of fatigue or weakness, the administration was discontinued for one day or the dose was reduced. Sodium or potassium sulphocyanate were used. The author also speaks favorably of rhodapurin, a proprietary preparation in candy tablets, in which the good effects of small rhodan doses are combined with the vasal dilating effect of caffeine. He finds rhodan ther-

*Read before the Minnesota Society of Internists, May 5, 1928, Duluth, Minn.

apy contraindicated in serious diseases of the kidney, serious decompensation of the heart and inflammatory diseases, such a pneumonia, bronchitis, tuberculosis, etc., as there is an increased danger of rhodan poisoning. He concludes that the results with rhodan were more satisfactory than those with the usual bromine preparations, iodine, nitrites, calcium, atropine and the endocrine substances.

Kramer[4] reports satisfactory results by the long continued administration of rhodan compounds in 70 cases of genuine hypertension. The blood pressure was often decreased from 50 to 60 millimeters. With the exception of those patients showing injury to the renal tissue, and those showing serious cardiac decompensation, his patients reacted rapidly to the drug and the result was lasting. He continued the use of the drug in ration doses for months without observing unfavorable reactions.

Gager[5] in this country reports thirty-five patients with essential hypertension that have been treated at the Cornell Clinic, only three of which entirely resisted the blood pressure reducing effects of sulphocyanate. In twenty of the group of twenty-five patients who have been under observation for several months there had occurred an individual fall in the blood pressure from 20-60 points. There had been less marked but definite lowering of the diastolic pressure. Most of the patients express a feeling of betterment after reduction of the pressure by this drug. In some cases the results came quickly, while in others a more prolonged course had to be given. In two of his patients the drug rash appeared similar to that of iodide. He gives the contraindications as acute inflammations of all types and marked renal insufficiency

Takacs[6] highly recommends the use of rhodan as a means of lowering the blood pressure. He conducted experiments which show that the maximum effect is usually reached within 45 to 60 minutes and maintains its highest point for three hours, but by systematic administration one may observe results slightly better than those observed after the single administration. He also reports a case of cutaneous eruption of a papular type after giving one gram daily for nine days. The eruption disappeared in one week after discontinuance of the drug.

The pharmacologic and therapeutic properties of the sulphocyanates have been thoroughly dealt with by Nichols[7] in 1925, to which paper I refer you for details. Time will allow me merely to mention the more important ones. As has been long known, sulphocyanate of sodium or potassium occurs normally in the saliva, tears and gastric juice. The mode of this formation has not been completely worked out. It is generally supposed to result from the katabolism of the sulphur-containing proteins and can be formed mainly in the salivary glands, from which it is secreted into the saliva and then swallowed and absorbed into the system. In this manner 0.1 of a gram is swallowed daily. It increases the flow of gastric juice.

Ingested sulphocyanates are excreted as such by the kidneys and are demonstrable in the urine of persons taking the drug. Their excretion takes place very slowly. After discontinuing the ingestion of the drug, the urine does not become free of sulphocyanate until after a number of days. This suggests the possibility of an accumulation of the drug in the system. During the ingestion of sulphocyanate the amount secreted in the saliva increases over the normal and persists for some time after its discontinuance, and this increase in the saliva persists for some time after it has disappeared from the urine. Sulphocyanates therefore pass through the organism unchanged and do not undergo transformation into the deadly hydrocyanic acid and cyanids. In large doses sulphocyanate is a powerful poison and exerts a very potent effect as a direct muscle poison abolishing muscular activity.

The consensus of opinion is that the effects of the drug are due to the sulphocyanic radical. The sulphocyanate of potassium has been generally regarded as more toxic than that of sodium, but Nichols[7] does not know of any comparative study demonstrating this. The minimum lethal dose of sodium sulphocyanate for a medium sized man of weight 70 kilos (154 pounds) would be from 15-30 grams given at one time.

Nichols[7] reports favorable results from the use of sodium sulphocyanate in nine out of twelve cases. The use of the drug in these three cases was really contraindicated as one had a serious nephritis and the other two showed serious cardiac lesions. The reduction of the blood pressure in the other nine cases varied from 50 to 100 points, the reduction appearing soon in some of the cases while in others only after prolonged administration of the drug. He feels that sodium

sulphocyanate is one of the best remedies available in the treatment of hypertension.

SUMMARY OF CASES

My experience with the sulphocyanates results from the use of potassium sulphocyanate in twenty-four cases of essential hypertension, or so-called hyperpiesia. In most cases the patients were ambulatory, and blood pressure readings were taken at the office under the same circumstances as far as possible, namely, having the patient always in a sitting position and resting from 5-10 minutes before the initial reading was made, then resting for another 5-10 minutes when the second reading was made, and the average of the two taken as the blood pressure for that day. Where undue physical or psychical disturbances occurred on any certain days, it has been noted in the record. All patients were placed at once on a moderately low protein and salt diet. (In several cases the urine was checked for total chlorides and they were never found to be below 5 grams, so I do not believe the reduction of salts has had any particular effect on the blood pressure if I am to believe what Allan states in his studies along this line. In fact, I have found it almost impossible even under hospital conditions to get the salt in the urine below 0.5 gram, which is a figure that Allan has set before a definite drop in blood pressure can be expected.) Favorable reduction of the blood pressure resulted in twenty-one cases; only two cases seemed to be refractory to the drug and little or no decrease in blood pressure was obtained after giving the drug a fair trial. One patient showed a good drop in blood pressure after taking the medicine for a week, but the drug had to be discontinued because of extreme nervousness, and weakness. The greatest reduction in the blood pressure was 110 points systolic, the least 10 points; the greatest diastolic drop was 50 points, and the least 0 points. The average reduction was systolic 50 points. diastolic 25 points. Most of the patients showed the highest reading on the first visit—probably due to nervousness.

REPORT OF THIRTEEN CASES

Case 1.—Mrs. C. M. Age 55. Diagnosis: 1, Hyperpiesia; 2, Hypertrophied heart; 3, Auricular flutter.

This patient came to the office with a blood pressure of 220/140. One week later she developed auricular flutter which disappeared under quinidine therapy at hospital. Digitalis was given along with the potassium sulphocyanate until the heart was fully compensated. Sodium iodide or potassium-iodide-theocaline tablets (Bilhuber) were alternated with the sulphocyanate solution as chart indicates. (Dotted lines indicate time of unreliable or no blood pressure readings.) Blood pressure came down to an average of 144 systolic and 88 diastolic while on ration doses of potassium sulphocyanate.

Case 2.—Mrs. D. W. G. Age 44. Diagnosis: Hyperpiesia.

This patient came to my office with a blood pressure of 180/100. Under sodium iodide, blood pressure remained the same for three weeks, and then increased to 190/120, at which point potassium sulphocyanate was given and the blood pressure steadily dropped to 128/80 in two months. The patient felt so well at this time that she thought she needed no more treatment and did not return for two months, having been without treatment of any kind during this time. I found her blood pressure to be 180/110. Potassium sulphocyanate for two weeks brought the blood pressure down to 144/84, then it was stopped and sodium iodide again given, under which the blood pressure again ascended to 180/100. This patient always feels better while taking potassium sulphocyanate and it has never failed to reduce her blood pressure and keep it down when she remains on ration doses. (See Chart 1.)

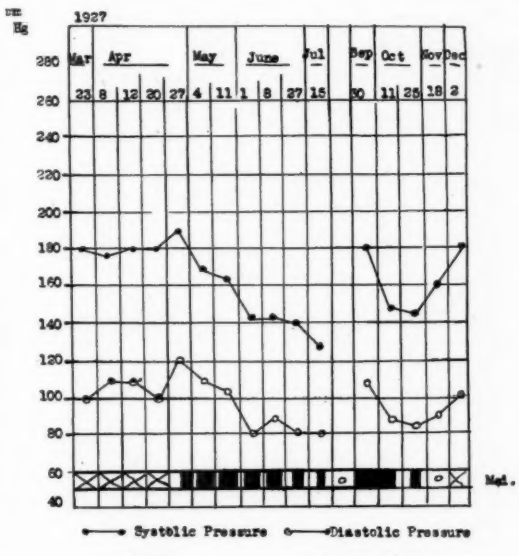

Chart 1. Case 2. Mrs. D. W. G. Age, 44. Diagnosis—Hyperpiesia.

Case 3.—Mrs. A. T. Age 54. Diagnosis: Hyperpiesia, with typical hypertension type heart.

Patient came to me with a blood pressure of 255/120. Under rest, diet and sodium iodide the pressure came down and remained at an average of 180/95 from February to July, 1926. She was not seen again until February, 1927, when the blood pressure was 200/90.

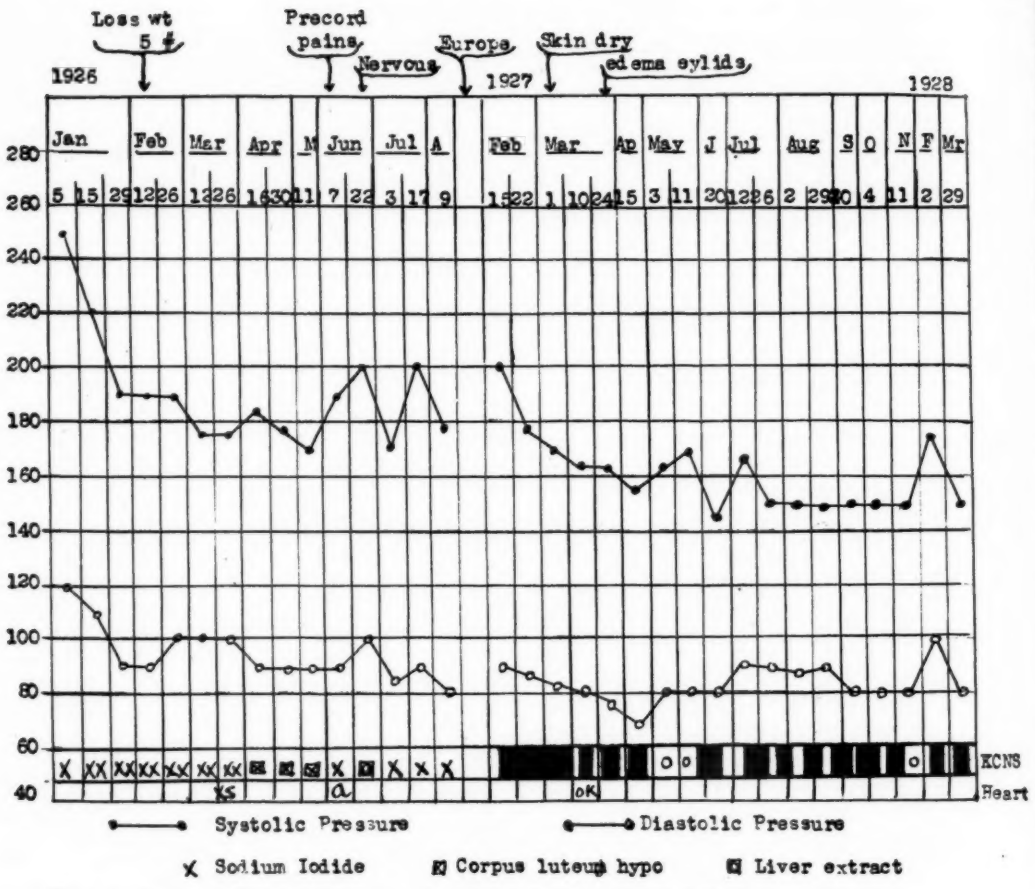

Chart 2. Case 3. Mrs. A. T. Age, 54. Diagnosis— Hyperpiesia, Typical Heart.

Under potassium sulphocyanate the pressure came down to an average of 150/84, where it remained for a year on ration doses of this drug. In 1927 corpus luteum extract was given hypodermically because of the annoying symptoms of menopause, without affecting the blood pressure. In 1928, two short courses of liver extract were given without noticeable effect upon the blood pressure. During the past six months this patient has been able to keep her blood pressure always below 170 systolic on ration doses of potassium sulphocyanate. (See Chart 2.)

Case 4.—Mrs. J. T. J. Age 63. Diagnosis: 1, Hyperpiesia; 2, Neurosis.

This patient came to the office with a blood pressure of 235/100, and during the year 1926 had an average blood pressure reading of 184/96 while on lipiodine tablets and bromides. Beginning in March, 1927, potassium sulphocyanate was given until September, during which time the average blood pressure reading was 160/90. The patient was feeling fine. (See Chart 3.)

Case 5.—Mrs. F. L. H. Age 69. Diagnosis: 1, Hyperpiesia; 2, Moderate arteriosclerosis; 3, Typical hypertension heart with some evidence of myocardial changes.

This patient came in with a blood pressure of 225/120. She stated she had been under the care of an internist for the past two years, during which time the blood pressure had never been found below 190. Under rest, diet and sodium iodide, pressure came down to 190/100, where it remained stationary for two weeks, when potassium sulphocyanate was started. The blood pressure dropped to 130/70, when this drug was discontinued. Blood pressure again went to 170/90 but came down again to 142/78. Blood pressure always remained at about an average of 160/85 while on potassium sulphocyanate and at 190/105 while on other forms of treatment. When the drug was continued in full doses for more than two weeks, the patient usually complained of weakness and slight diarrhea, but she did well on ration doses of the drug.

Case 6.—Mrs. E. K. N. Age 61. Diagnosis: 1, Hyperpiesia; 2, Angina pectoris.

This patient was first seen in 1922 when only one

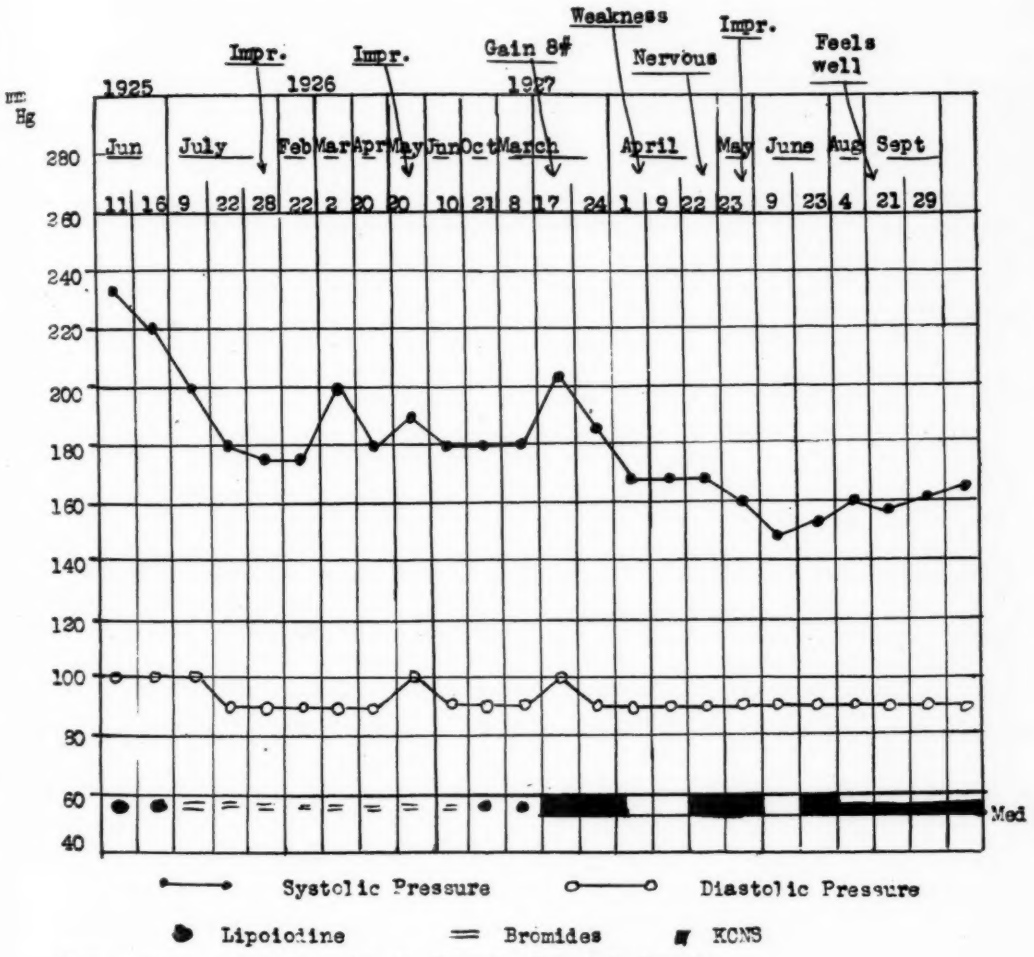

Chart 3. Case 4. Mrs. J. T. J. Age, 63. Diagnosis— Hyperpiesia, Neurosis.

blood pressure reading was made, 240/110. She was again seen in January, 1927, when blood pressure was 224/90. She was sent into the hospital and was in bed for three weeks receiving potassium iodide. The average blood pressure during this time was 197/90. The lowest reading was 190/90. She left the hospital on March 3, when her blood pressure was 200/100 and was given a bottle of 8 per cent potassium sulphocyanate to take home with her with instructions to take a teaspoonful in a whole glass of water three times a day. She reported one week later, when her blood pressure was 150/90, complaining of being a little weak. One week later it was 128/80. The medicine was then discontinued and during the next three weeks the blood pressure gradually rose to 170/80, when the potassium sulphocyanate was started again, this time being given only four days a week. The blood pressure steadily dropped and a month later was 120/80. At this point the drug was again discontinued and in the course of the next two or three weeks again rose to 160/90. During the period when she was not getting the potassium sulphocyanate, she was given some form of iodide, or bromides when nervous. If the blood pressure was down for two or three weeks and she was only given ration doses of the sulphocyanate, she felt much better and her heart functioned better. (See Chart 4.)

Case 7.—Mrs. N. H. Age 60. Diagnosis: 1, Hyperpiesia; 2, Chronic alcoholism.

First blood pressure reading Oct. 15, 1927, was 160/90. Under sodium iodide it rose to 180/100. Under potassium sulphocyanate in the course of three weeks it came down to 120/70, after which patient was lost track of.

Case 8.—Mrs. C. H. Age 39. Diagnosis: Hyperpiesia.

This patient came in with a blood pressure of 190/100. On potassium sulphocyanate it came down to 120/80. The drug was discontinued and the blood pres-

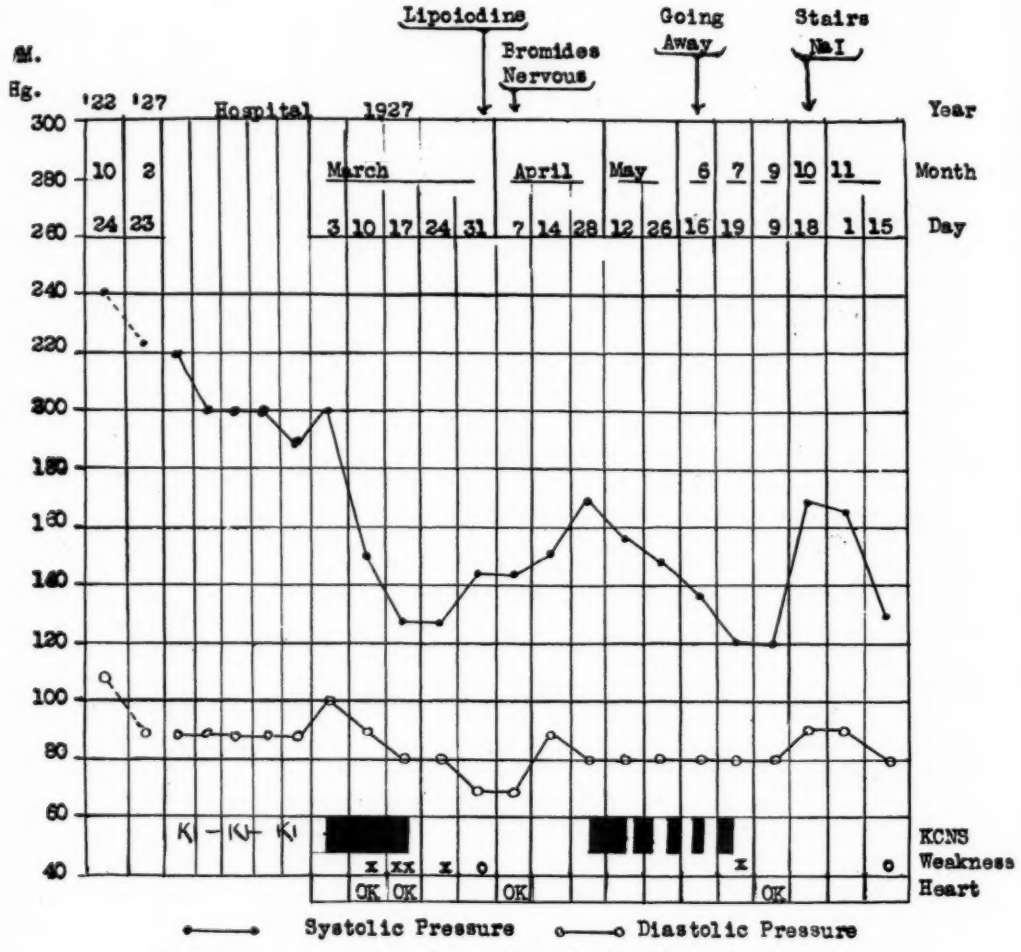

Chart 4. Case 6. Mrs. E. K. N. Age, 61. Diagnosis—Hyperpiesia, Angina Pectoris.

sure rose to 160/90, but came down again under ration doses to 140/90. She felt better when the blood pressure was down.

Case 9.—Mrs. A. T. Age 57. Diagnosis: Hyperpiesia.

This patient told me she had been attending a free dispensary for five years, during which time her blood pressure had ranged from 270 to 200. She stated that it had never been below 200 during all this time. I took her blood pressure on July 23, 1927, and found it to be 218/120. Under rest, diet, and sodium iodide, in one month, it came down to 160/90, but then steadily rose again to 200/130. Potassium sulphocyanate was started and the blood pressure came down in three weeks to 130/80, where it remained as long as patient stayed on ration doses of the drug.

Case 10.—Mrs. H. T. N. Age 41. Diagnosis: Hyperpiesia with secondary cardiac changes.

This patient was in bed at the hospital during the entire course of treatment. First week her average blood pressure was 210/120, during which time she was on a low protein, low salt diet, and sodium iodide. Potassium sulphocyanate was then given and in the course of three weeks the blood pressure steadily came down to 150/90, at which time the patient left the hospital. The last week at the hospital the patient was up and around but this apparently had no effect on the blood pressure. (See Chart 5.)

Case 11.—Mrs. H. G. Age 65. Diagnosis: Hyperpiesia.

This patient was under observation for nine months, during which time her average blood pressure under iodides was 190/100. The average blood pressure while on potassium sulphocyanate was 170/94. She complained of slight weakness at times when taking the medicine.

Case 12.—Mrs. A. C. Age 53. Diagnosis: 1, Hypertension heart with decompensation; 2, Neurosis.

This patient came to me with a decompensated heart and blood pressure of 290/150. Under rest in bed, diet,

etc., at the hospital the blood pressure came down to 210/120. Under three weeks of potassium sulphocyanate, the blood pressure came down to 200/100, but only small doses could be given as the patient did not tolerate the drug well. Three or four months later when the heart was in better condition, the drug seemed to be tolerated better, and the blood pressure came down to 184/90.

Case 13.—E. P. C. Age 42. Diagnosis: Hyperpiesia. This patient came to me because of retinal hemorrhages. I found a blood pressure of 225/150. Under sodium iodide and diuretin, the patient's blood pressure came down to about 210/130 as an average. Because of a psychic disturbance, the patient was removed to the hospital, during which time the average blood pressure was 204/120. The mental condition cleared in the course of three weeks and the patient was sent home on potassium sulphocyanate. During the next two months the blood pressure came down steadily, finally reaching a level of 130/80, when the patient was allowed to go back to work. (See Chart 6.)

A similar number of cases of essential hypertension treated by the old method of low protein and low salt diet with iodides, nitrites, bromides, etc., showed an average reduction in blood pressure of 17 points. The greatest reduction in any case was 52 points, while the poorest result was an increase of 36 points. The average reduction of the diastolic pressure was 7 points, and the greatest 30 points, and the poorest result was an increase of 10 points.

In analyzing the symptoms the patients had following and during the use of the drug, I find that nine complained of definite weakness, eight of definite increased nervousness (three of these cases however were neurotic), one of diarrhea; none complained of excessive salivation. Fourteen stated that they were feeling definitely better (which was probably due to the reduction of the blood pressure and possibly some slight sedative effect of the drug); one showed a definite edema of the eyelids; three exhibited dryness of the skin; and two (Cases 14 and 15) developed a severe dry scaly dermatitis associated with fever and some prostration. In both cases I believe it was due to an accumulation of the drug in the system, as it disappeared two or three weeks after discontinuing the drug. Both patients had taken more of the drug than had been prescribed—one having doubled the dose thinking he would derive twice as much reduction of blood pressure—and both having taken the drug two weeks longer than had been advised. In both cases the eruption was a dry, scaly, itching dermatitis covering the entire body and associated with fever and some prostration and marked inflammatory reaction of the skin. In both patients the blood pressure during the time of eruption was low. Although these two patients with secondary dermatitis had taken larger doses than prescribed, still there are patients in the series who really took much more of the drug than these two without showing any skin

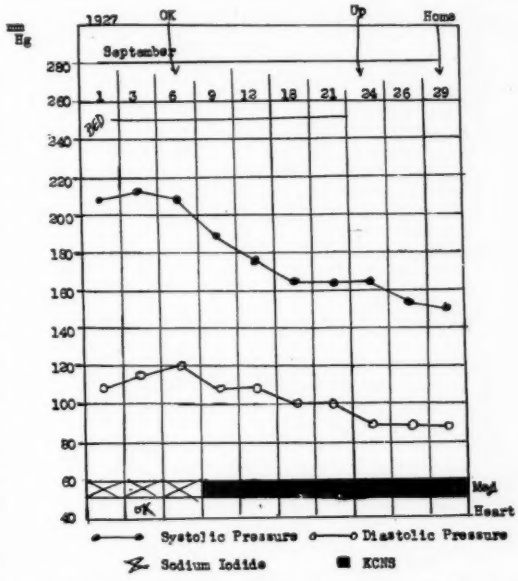

Chart 5. Case 10. Mrs. H. T. N. Age 41. Diagnosis—Hyperpiesia with secondary cardiac changes.

manifestations; so I believe that a special idiosyncrasy to the drug existed.

In all cases an 8 per cent solution of potassium sulphocyanate in distilled water was used, usually starting with a dose of one dram or a teaspoonful in a whole glass of water, three times a day after meals. This was usually continued for two weeks if no unfavorable symptoms (marked weakness, nervousness or dermatitis) resulted, at which time it was discontinued for two days and then the patient would take the same dose, omitting two days in each week. After four weeks or sometimes sooner, according to the drop in blood pressure and general symptoms of patient, it was reduced to twice a day. I continued this dose indefinitely on a ration basis, omitting the drug two to three days a week, as the case indicated. I believe in this way an accumulation of the drug can be avoided. In most of the cases this ration dose was enough to keep the

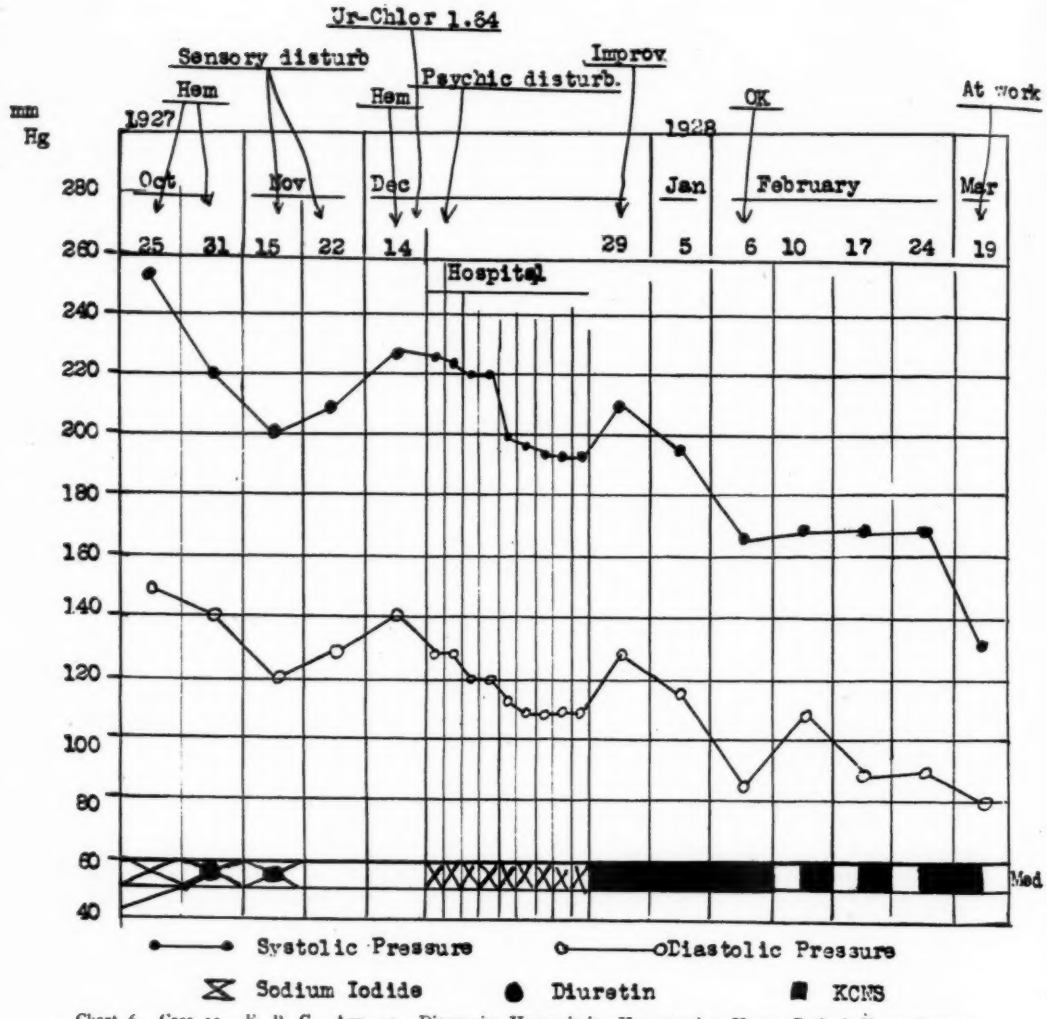

Chart 6. Case 13. E. P. C. Age, 42. Diagnosis—Hyperpiesia, Hypertension Heart, Retinal Hemorrhages

blood pressure at a considerably lower level than it would have been otherwise without the drug. Some men report the patients complaining of nausea after taking the drug, but I did not note this in any of my cases.

CONTRAINDICATIONS

The only contraindications that I observed were in cases of idiosyncrasy to the drug in one way or another, and where there was considerable kidney or myocardial damage. I believe it would be wise to have an electrocardiogram taken before prescribing the drug, if the clinical impression indicates weakening of the myocardium. Other authors add to this list cases with extreme cardiac decompensation and all inflammatory conditions.

THEORY OF MODE OF ACTION

The question of how the drug acts is an interesting one. Takacs[6] believes the action of the drug results from the stimulation of the vagus, on the basis that the vasal dilators of an individual region proceed from the vagus. The lowering of the blood pressure after stimulation of the vagus is generally known and it can also be

assumed that the lowering of the blood pressure after the use of rhodan preparations occurs on account of the strengthened tonus of the parasympathetic nervous system or to stimulation of the vagus. He shows that if the vagus is first paralyzed with atropine the lowering of the blood pressure does not occur after giving the sodium sulphocyanate.

The explanation of the therapeutic effects of sodium sulphocyanate in lowering blood pressure is scarcely possible on the basis of the physiological and pharmacologic action, as in large doses it has been found to exert a directly opposite action. Nor does this therapeutic effect seem explainable on the ground of promoting the elimination of calcareous deposits in the sclerosed arteries, since the removal of such deposits would probably take place much too slowly to account for the prompt reduction of the blood pressure that frequently occurs. Besides, a more permanent reduction of blood pressure should be expected from decalcification of the arteries than occurs clinically.

The response of blood pressure to this or other treatment depends on the pathology and etiology of the particular case. Organic changes in the arterial walls and spasmodic contraction of the arterial muscles from nervous, toxic or other influences, are the two important factors. Where a marked hypertrophy of the elastic fibers of the media has taken place, a constant hypertensive level usually exists with only slight variations. Where only a spastic contraction of the arterial muscles exists without organic change, the hypertensive level fluctuates considerably. The range of this fluctuation should give one an idea as to how much organic change has taken place; for example if the fluctuation is only slight and the minimum systolic and diastolic levels noted are considerably above normal, then one would deduct that the organic changes in the arterial musculature have progressed considerably. The converse would indicate little or no organic change, the chief factor being a spasmodic condition. This latter type is the one more amenable to treatment. In either case it is advisable by whatever means possible to keep the blood pressure below 170 systolic, for it is above this level that Mosenthal[8] finds damage begins to the arterial system as well as the heart.

CONCLUSION

My impression from observations in the use of potassium sulphocyanate in twenty-four cases of essential hypertension leads me to believe that it is the most valuable drug that we have in reducing the blood pressure. If the proper precautions are taken in regard to dosage, no unfavorable symptoms should result. It is my plan to continue the use of this drug, making more carefully controlled studies. I realize that no definite facts can be derived from so small a series and among private patients where long periods of control readings are difficult to obtain. I am hoping that this paper may stimulate some well controlled research work in the use of the sulphocyanates in a large series of cases.

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CLINICAL ASPECTS OF CYSTITIS*

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INFLAMMATION of the urinary bladder is a condition which is frequently met with in practice. It varies considerably in severity and progress, ranging from evanescent discomfort, with few symptoms, to a condition of severe distress and great disability; by itself rarely fatal, yet its effects and associated lesions may be extensive and destructive.

Presented with a case of cystitis in any form or degree, the clinician must acquaint himself with the exact pathological condition present, visualizing abnormal findings morphologically, bacteriologically, as well as mechanically, both locally and at a distance, and establish the causative factors, before a true estimate as to diagnosis, prognosis, and treatment can be determined. He must not linger long with mere local treatment, before searching locally, contiguously, as well as systemically, for the cause and extent of the trouble.

In a large proportion of cases of cystitis, one finds a mechanical interference with drainage directly or indirectly affecting the bladder; occasionally trauma, and usually a contiguous and spreading infection. From a clinical standpoint, while infection is always associated with urinary cystitis, traumatic irritation, and especially mechanical interference with drainage, is many times the exciting cause and reason for the continuation of the local infection, so that not only must the influx of bacteria be shut off, but physiological drainage be re-established. Then the cystitis will naturally clear up.

From a clinical standpoint, urinary cystitis can be classified according to etiology, pathology, or prognosis. According to etiology, we find cystitis due to chemical irritation, bacterial infection, infestation with yeast fungi and animal parasites, and mechanical causes. Pathologically we may have acute cystitis, usually superficial, localized or general, and chronic cystitis, which is usually deep or involves the interstitial tissues, including ulcerative and cystic cystitis, leukoplakia, malakoplakia, incrusted alkaline cystitis, simple and elusive ulcers, granuloma, and syphilis. As to prognosis, we have the resolving and progressive types of cystitis. We shall review this classification in more detail later.

Chemical cystitis may be caused by faulty metabolism, ingested or introduced poisons. Faulty metabolism may be of dietetic origin or due to individual dyscrasia. The resulting chemical irritants, which are excreted in excess in the urine, may be: oxalates, urates, phosphates, cystin or xanthin. Examples of foods which may produce metabolic irritants are: strawberries, tomatoes, asparagus and rhubarb. Glycosuria may cause a chemical cystitis. Ingested poisons or drugs liable to irritate the bladder are: cantharides, balsamic oils, turpentine, coal tar products, urinary antiseptics, and poor whiskey. Poisons introduced directly into the bladder are: bichloride of mercury, phenol and nitrate of silver, in caustic strength.

There is a normal resistance to infection of the bladder of a rather high degree, in the well-draining bladder. Bacteria excreted by the kidneys will be voided, without affecting the bladder, for indefinite periods, unless trauma or obstruction intervenes. In other words, infected urine does not necessarily mean cystitis, and bacilluria, as well as cocciuria, may be present, without pus. If a lessened resistance is developed through trauma, or continued congestion, as by exposure to cold or excessive venery, or a mechanical condition of obstruction or retention either partial or complete develops, then bacterial invasion is quickly established.

The bacteria associated with cystitis are most frequently the colon bacillus and staphylococcus. Less frequently we will find the bacillus tuberculosis, typhosus, pyocyaneus, proteus, lactis aerogenes and salmonella ammoniæ, the gonococcus, streptococcus, and micrococcus ureæ. Usually a mixed infection supervenes. Acute cystitis is more often associated with coccal infection; while chronic types are usually bacillary. Acid cystitis is produced by the colon bacillus, tuberculosis, typhoid and gonococcus; whereas the staphylococcus, streptococcus, pro-

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teus and salmonella ammoniæ are productive of an alkaline reaction in the urine.

Paths of infection may be ascending from the urethra and the ducts emptying therein, usually of gonococcal, staphylococcal or pyocyaneal origin. Descending infection is exemplified by tuberculosis. Infection by contiguity may follow a prostatitis, seminal vesiculitis, parametritis, pelvic or abdominal abscess. Infection through the circulation (hematogenous) may be caused by the streptococcus or typhoid bacillus, entering the bladder via the kidneys.

Acute cystitis may be caused by chemical irritants, dietetic, introduced or ingested poisons. Traumatism, whether accidental or by operative manipulation, may lower resistance to infection or establish mechanical barriers to drainage. Instrumentation, or the introduction of foreign bodies, may open the way to infection. A clean catheter or cystoscope properly introduced never causes a cystitis. By relieving retention, distention or back pressure, it prevents it instead. Under acute cystitis we must mention so-called honeymoon cystitis, a rather frequent occurrence, caused by congestion, traumatic irritation and infection by either the gonococcus or, more frequently, the colon bacillus.

Chronic cystitis is usually associated with obstruction or improper drainage, persistent influx of bacteria from the kidneys, or from a chronic prostatitis or parametritis. A localized form of chronic cystitis may take the form of a trigonitis, usually associated with either cystocele, urethral caruncle or prostatic enlargement.

The deep or interstitial types of cystitis may be listed as follows: ulcerative, gangrenous, cystitis cystica, leukoplakia, malakoplakia, incrusted alkaline cystitis, simple ulcer (Fenwick), elusive ulcer (Hunner), granuloma (Braasch), and syphilis.

Leukoplakia involves the bladder, as well as the ureters and renal pelvis, and was described by Rokitansky in 1861. It is associated with a long continued infection, either tuberculous or non-specific. An epithelial proliferation or keratinization develops, giving the bladder wall a characteristic whitish appearance. Malakoplakia is a rare condition described by Von Hansemann in 1903. Elevated yellowish plaques develop which assume pedunculated forms resembling condylomata. Incrusted cystitis with alkaline urine is described by Hager and Magath as a secondary invasion of the bladder with the Salmonella Ammoniæ, a Gram-negative bacillus, usually resident in the intestinal canal. It causes the liberation of an enzyme which converts urea into ammonia, causing alkaline urine, thus precipitating calcium, magnesium and ammonium, in the presence of any type of chronic bladder lesion—often of focal origin. Simple ulcer of the bladder was described by Fenwick as an entity in 1896. It is usually situated in the floor or base of the bladder and has a punched-out appearance. The Elusive Ulcer of Hunner is a submucous fibrosis with linear mucosal lesions. Granuloma of the bladder was described by Braasch and Hurley as localized areas of hyperplasia of mucosa and submucosa, varying in size, number and location. They favor the persistence of infection or may be confused with neoplasms. Syphilitic cystitis is uncommon, rarely associated with the secondary stage and chiefly a tertiary gummatous process. Cord lesions affecting bladder drainage are the more frequent luetic bladder affection, and disastrous in results.

Animal parasites causing cystitis are: Bilharzia, causing endemic hematuria, Trichomona vaginalis, and Anguillula Aceti. Vegetable fungi and yeasts associated with cystitis are: Penicillium glaucum, Mycelia, Oidium, Aspergillus, Actinomycosis, Sarcinæ Urinæ, and yeast fungi in sugar urines.

Mechanical causes such as foreign bodies, stones, tumors may produce local irritation. There may be trauma, either by direct injury or pelvic fracture; by catheterization or other instrumentation; by operative measures, as in hysterectomy; by fetal head pressure or instrumental delivery. Exstrophy of the bladder always is accompanied by a chronic cystitis. Contiguous causes of bladder irritation may be pressure of extravesical tumor, invading malignancy, or perforating abscess.

Obstruction, which interferes with proper bladder drainage in one form or another, is the most important cause of cystitis, especially of a chronic or progressive type. The various mechanical factors entering into this classification may be enumerated as follows: phimosis, urethral stricture (male and female) or rupture of the urethra, prostatic enlargement, whether due to adenoma, carcinoma or prostatitis, contracture of the vesical neck or bar, bladder tumor, ureterovesical cyst, diverticulum, cystocele or pelvic

floor relaxation. Spinal cord lesions which cause atony or improper drainage of the bladder are: degenerative myelitis, traumatic injury or pressure from a tumor within the spinal canal, and tuberculosis of the vertebræ in its destructive stage. These various mechanical, as distinguished from the infectious, factors causing cystitis, lower resistance, produce chronic congestion, and interfere with drainage, allowing bacterial fermentation and infiltration, which, in spite of any treatment directed, either locally or internally, against the infection, will persist until physiological drainage is re-established. The mere presence of bacteria in the bladder seldom causes pathological changes without some mechanical change exciting it; that is why careful catheterization and cystoscopic manipulation seldom cause cystitis, in spite of the many chances of infection to which the bladder is thereby exposed.

The most frequent cause of unresolved cystitis is interference with drainage, whether due to congenital defects, trauma, prolapsed bladder, stricture, or tumor in the lower excreting canal or neighboring tissues, and spinal cord disease. Given obstruction with infection, the infection spreads to the upper urinary organs and a vicious circle is established; metabolism is affected and a dangerous condition exists, and either a fulminating or a chronic destructive process ensues. If the cycle can be broken, well and good; if local treatment only is used and the indirect causative factors unrecognized, relief will not be obtained unless a kindly "vis naturæ medicatrix" steps in to perform for us.

When confronted clinically with a case of suspected bladder inflammation, it is essential to gather a careful history, first of all, noting any indication of focal infection—the teeth, tonsils, sinuses, appendix, gallbladder, prostate, and cervix uteri being the most frequent offenders. Tuberculosis and syphilis should be recognized if present. The physical examination should begin with a local investigation for cystocele, pressure of neighboring pelvic or abdominal organs, interfering with adequate drainage of the bladder or ureters. Stricture of the meatus or urethral canal, caruncle, prostatic obstruction or infection, seminal vesiculitis or infection of Cowper's, Skene's or Bartholin glands, urethritis, or pressure due to congenital anomalies, may be present. Exstrophy of bladder is self evident. Kinked or strictured ureter, pyelitis or pyelonephritis should be ruled out. A careful examination of bladder urine must be made and cultures developed. Pelvic and rectal examinations are instructive, and finally urethroscopic and cystoscopic studies may be indicated, looking for stricture, ulcers, foreign bodies or calculi; ureteral catheterization to determine stricture or infection. *X*-ray studies of the kidneys, ureters and bladder may be needed to clear up the picture. In short, our problem is to seek the predisposing and exciting causes by investigating the whole urinary tract and the body as a whole, so that the causes can be found and removed. The cystitis will then rapidly subside. Treatment is impossible without a comprehensive pathological diagnosis.

SUMMARY

1. Do not treat a case of urinary cystitis without making a thorough clinical examination.
2. Pathological diagnosis is essential for successful treatment.
3. An apparent cystitis may be the first clue to an associated pathological condition in the urinary organs.
4. Cystitis is often a minor ailment, but should not be accepted as such until proven so by careful study.
5. Cystitis is caused by chemical irritation, infection with bacteria, animal parasites, yeasts, or fungi.
6. There exists a high degree of immunity to infection in the normal bladder wall.
7. Mechanical factors involving proper drainage of the bladder are exceedingly important in the etiology of cystitis.
8. Determination of associated lesions and their correction is the basis of the treatment of most cases of cystitis.

DISCUSSION

HERMON C. BUMPUS (Rochester, Minn.): Doctor Sohmer's review of cystitis was so complete that there is really little for me to add. However, I do feel that one type of the disease that we are seeing in increasing numbers calls for special emphasis, namely, the so-called elusive ulcer of Hunner or, as we prefer to term it, interstitial cystitis. The symptoms are characterized by the most extreme frequency, at times as frequent as every fifteen minutes day and night. The least bladder distension is accompanied by the most extreme pain, compelling the patient to empty the bladder at once. There is usually experienced pain in one or the

other lower quadrants upon walking or riding. Yet with all these evidences of extreme cystitis the urinalysis is negative.

When therapy consisted in resection of the involved area, pathological examination showed round cell infiltration and Doctor Meisser and I were able to produce the disease experimentally in rabbits by the intravenous injection of organisms from foci in the teeth and tonsils, thus indicating that it is really an infection of the bladder wall when in the acute stage. Resection proved of little value because of its postoperative limitation of bladder capacity and was abandoned. Following this, electrocoagulation of the involved area became the accepted procedure. However, recurrences were frequent and continued electrocoagulation impossible. More recently I have been overdistending the bladder under an anesthetic. This has given surprisingly good results. Of how long duration, time alone will tell, but the method is simple and its repetition is feasible.

THE TRICHO SYSTEM

According to the advertising booklet distributed by "beauty parlors": "Tricho System is the invention of Albert C. Geyser, M.D., a New York physician internationally famous as a specialist on Electro-Therapy." Dr. Geyser claims to have so modified the *x*-rays that with his apparatus it is possible to produce permanent baldness in hairy areas without any possibility of doing damage to the skin. It is not necessary to tell physicians—at least, those with any extensive dermatologic experience—how serious a menace is the use of *x*-rays in the removal of superfluous hair. The tragedy in the case arises from the fact that the pre-cancerous keratoses and other untoward effects are usually not evident for months after the "treatment" has been given. Further, the victims—nearly always women—frequently refuse to prosecute, because of the inevitable publicity. A few dermatologists have, however, reported cases of the disfiguring and dangerous sequelæ that have followed the use of the Tricho System. (Jour. A. M. A., January 19, 1929, p. 252.)

WHY HAVE INFLUENZA?

The following are a few of the numerous advertisements of products of manufacturers that are capitalizing the present epidemic of influenza: Adlerika, Creomulsion, Bulgarian Herb Tea, Kogene, Glyco Thymoline, Father John's Medicine, Pluto Water, Nujul, Lifebuoy Soap, 666, Vapex, S S S, Zonite, Nozol, Musterole, Luden's Menthol Cough Drops, Florida Oranges and Grapefruit. (Jour. A. M. A., January 19, 1929, p. 253.)

THE DOCTOR AS TRAINER OR HEALER

"Doctors ought to be like the mechanicians who take contracts to keep clocks going and on time, rather than emergency men to be summoned when timepieces stop or are too fast or too slow."

G. E. Vincent, *Bulletin of the New York Academy of Medicine,* November, 1928.

PRESIDENT'S LETTER

"IT GIVES A LOVELY LIGHT"

"Of course we are a smart people. We know about the violet ray and pay $14.95 for a little dingus that gives a purple light."

Quillen in the *St. Paul Dispatch.*

MR. EDISON when asked about these appliances for household use is quoted as saying "Ridiculous." That the violet ray is of undoubted value when intelligently used, probably admits of little argument, but on the other hand when this or any other form of therapeutic lamp or electrical appliance is handled by those who are unskilled, or lacking a knowledge of the physics of light in general or the violet ray in particular, they are quite as likely to be harmful as they are to be beneficial. In an article, "A Comparison of Cod Liver Oil and Ultra-violet Light for Use in the Prevention of Rickets," in the November, 1928, issue of the *American Journal of Diseases of Children,* Dr. Holmes, Boston, Mass., and his co-workers, tell of using a definite brand of cod liver oil, which according to the test described in the U. S. Pharmacopeia, showed a vitamin content of 1.250 units per gram. The intensity of the current from the ultra-violet lamp was also accurately measured. This latter showed that the wattage varied materially from day to day, owing to fluctuating conditions in the city lighting circuit, a point to be borne in mind under all conditions of exposure to the ray. It was noted that the animals receiving fifteen minutes irradiation and 15 mg. of cod liver oil gained slightly more than those which received either ultra-violet light or cod liver oil alone. It also appears that the calcium and phosphorus content of the blood was materially higher in the blood of animals receiving cod liver oil alone than in those exposed to irradiation alone. The results showed that the daily ingestion of 5 mg. of the cod liver oil used in this series of experiments gave greater protection against rickets than fifteen minutes exposure to the ultra-violet light.

Attention is called to this subject by our having seen recently several babies quite badly burned from the use of these lamps in unskilled and untrained hands, and a word of caution seems to us to be quite in order. Obviously, those who use these appliances should do so only after acquiring as definite a knowledge of the power and possibilities of light treatment as is obtainable.

EDITORIAL

MINNESOTA MEDICINE

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TUBERCULOSIS IN MINNESOTA

It is generally known that the incidence of and mortality from tuberculosis have shown a decided decrease in Minnesota as well as throughout the country in recent years. A survey of vital statistics kindly furnished by the State Department of Health has been made and some rather interesting facts have been deduced. No accurate information can be obtained from the number of active cases reported as to the incidence of the disease, for checking of death certificates has shown that many individuals dying of tuberculosis never have been reported previously. The mortality figures present a much more accurate picture of the tuberculosis situation and conclusions have been drawn from these alone. Unless otherwise stated figures refer to Minnesota only.

In 1890 the death rate from all forms of tuberculosis was 112.99 per 100,000. In 1909 the rate was unchanged (112.85). Even as late as 1918 there was evidence of only slight improvement, the rate having been reduced to only 108.43 in spite of all the effort expended in the fight. Since 1918, however, there has been a steady and marked decline in the death rate, except for a temporary increase in 1923, until in 1927 the rate had been nearly halved (58.34), the rate from pulmonary tuberculosis alone being in that year 50.22. It took a number of years for the education of the public and the segregation of cases at home and in the state, county and private sanatoria to affect the mortality rate.

An analysis of the reduction in mortality from the standpoint of age and sex is illuminating. The reduction in total deaths from tuberculosis has been from 2,275 in 1917 to 1,570 in 1927—a very encouraging showing. Each year during this period almost invariably more males than females succumbed to the disease although the male preponderance the last seven years has been but slight. A comparison of the two sexes in various age groups, however, shows marked variation in the totals for this eleven year period. From the ages 10 to 19 inclusive the females have predominated over the males, 2 to 1, while from 45 to 65 the situation is reversed and twice as many males as females died of tuberculosis. In the age group 20 to 24 the total deaths for this eleven year period showed a ratio of about 4 females to 3 males. In the next age group (25 to 29) the reduction in deaths among the females has been less marked than among the males so that conditions had become reversed during the eleven year period and more females die of the disease each year than males.

Some further figures might be of interest. During the past five years one-fifth of all tuberculosis deaths occurred between the ages of 15 and 24. One-fifth of the total deaths in Minnesota during the past five years in the age period

of 15 to 19 were due to tuberculosis (608 of 2,871 deaths), while between the ages of 20 and 25 nearly one-third of the deaths were due to tuberculosis (1,129 of 3,656 deaths).

On checking the number of patients in the sanatoria in Minnesota it has been found that the females in the age group 15 to 24 outnumber the males 2 to 1. In Saint Paul the past years the female death rate in the age group 15 to 19 predominated nearly 3 to 1 (59 to 20) over the males.

Generally speaking we may say, then, that whereas there has been a marked reduction in the death rate from tuberculosis in Minnesota since 1917 so that the male and female sexes are about equally affected today, the reduction in the mortality in the female sex in the age group 15 to 19 has not been so marked as in the male sex. The male deaths, however, outnumber the female deaths 2 to 1 in the age group between 45 and 65.

Nor are these findings limited to Minnesota. In New York City in 1926, 257 girls between the ages of 15 and 20 died of tuberculosis of all forms compared with 139 boys. In Baltimore there was also a marked predominance of girls in this age group compared with boys during the period from 1910 to 1926. In Cleveland the death rate in 1918 was equally distributed between the sexes in the 15 to 25 age period. Comparing the average death rate in this city for the years 1910 to 1914 with that for the years 1922 to 1926 the reduction in the female death rate was only 14 per cent compared with 52 per cent for males.

The explanation of such variations is not clear. Doubtless a number of factors have a bearing on the situation. Habits and exposure should be considered.

We know that rest, proper nourishment and sunshine will cure many cases of tuberculosis. Lack of these factors doubtless plays an important part in the development of the disease. The present-day passion for a "good time" leads to lack of sufficient rest. The boyish figure necessitates undernourishment. The present vogue of scanty attire while of distinct advantage from a health standpoint in mild weather is distinctly disadvantageous in cold weather.

It is possible too that girls are more exposed to open cases of tuberculosis in the home than boys. It is difficult to explain why men between the ages of 45 and 65 die twice as frequently as women of the same age.

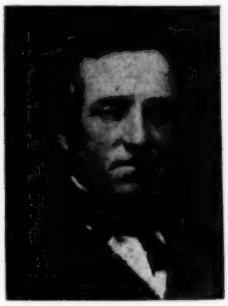
What can members of the medical profession do to remedy the situation? They can at least call attention to the situation and suggest preventive measures. It then remains for the parents of young girls particularly to insist that preventive measures be carried out.

HISTORICAL COMMITTEE

We haven't been informed by Dr. Workman that anyone has guessed the answer to our riddle of last month. Well, we might as well tell you. Dr. J. S. Stewart of St. Paul, surgeon of the First Minnesota Volunteer Infantry, was the first volunteer surgeon to enlist for the Civil War. Dr. Thomas R. Potts examined the first recruit for that regiment, Captain Josias R. King, who was the first man to enlist as a volunteer in the Civil War on the Union side. We present portraits of both Potts and Stewart.

J. S. Stewart

In our first contribution to the department we asked you if you knew that a Minnesota Medical Society was formed as early as 1853. Our present association records state it was in 1855, so we hereby advise that the records be changed to read 1853.



T. R. Potts

Dr. Potts had the honor of being elected President of that society. He presided also when our present association was formed in 1869. The old society apparently had been quiescent for some years. Shall we give you some more next month, or will you give us one? If you don't, we shall have to continue, if our editor will give us space.

J. M. A.

PAY CLINICS

The cost of sickness has increased in the last two decades out of proportion to the general increase in the cost of living. Never in the history of the world, however, has any country ever reached a high level of living comparable with that in America today. The automobile and radio have come to be considered such necessary equipment of the modern American family that they do not serve as obstacles to the tendering of free medical services to the owners.

The high cost of medical care is, nevertheless, a problem confronting the people today and is of vital interest to the profession. In an effort to solve it the committee headed by Dr. Ray Lyman Wilbur, President of Leland Stanford University, and composed of medical men for the most part, has laid out a five year program.

Most communities have for some time helped to solve the high cost of medical care, which is not entirely a new problem. The endowment and physical equipment (to say nothing of annual deficits) of many a hospital have been the gifts of wealthy citizens or the outcome of community campaigns. Few modern hospitals expect to do better than make expenses.

When, however, communities or "funds" begin to supply the services of physicians at cut rates in competition with private practice, it behooves the profession to express its disapproval in no uncertain terms. The pay clinic, so-called, as represented by the Cornell Clinic in New York city, is typical and has been the subject of debate in medical circles since its inception. New York is far enough away so that a pay clinic there can be mentioned with less danger of stirring up local animosity. Nevertheless medical activities right here in our own state by state, municipalities and beneficial associations are also good examples of unfair competition with general practice.

The Julius Rosenwald Fund with headquarters in Chicago is proposing to devote some of its funds to pay clinics or the like. An editorial in the December number of the Illinois Medical Journal came out frankly in opposition to the establishment of a pay clinic in Chicago on the ground that where a Fund or Foundation employs physicians and then furnishes services to the public for nominal fees it is competing with private physicians. "Ultimately the existence and development of such institutions will prove disastrous to medical practice, from the standpoint of the profession itself and of community welfare," this editorial avers. It really matters little whether the exchequer of a state or of a fund supports physicians in clinics which are cutting fees and competing with the profession at large. Mr. Michael Davis of the Rosenwald Fund is scheduled to address us at the Medical Economics meeting during the state convention and perhaps will be able to convince us of the desirability of Pay Clinics.

What other profession or business enterprise would sit complacently by and allow capital under the guise of philanthropy to deliberately interfere with private enterprise to the extent of offering their commodity to the public at less than the cost of production?

A PAGE FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

Is Medical Science Out of Step?

A superintendent of a good sized city school in Minnesota wrote us as follows:

"It seems to me that if Medical Science is out of step, except for the League Against Compulsory Medication, something should be done to inform the League. If not, something should be done to compel the League to prove statements that are contained in the enclosed."

Attempts have been made to interest the public in the truth about modern public health through various organizations as Parent Teachers Associations, Luncheon Clubs, Women's Clubs and so forth by having members of the medical profession speak at their health meetings. Many of these meetings have been held and in practically every case we have a report from the medical speaker as follows:

"This meeting seemed to be quite a success from the standpoint of the layman, but I was very much surprised at the lukewarm support we had from the profession down there. Out of some thirteen or fourteen medical men in that city, only two were present, the presiding chairman, Dr. ———, and Dr. ———. I should say that there were probably two hundred adults in the audience. They seemed to follow the subject with a great deal of interest and asked innumerable interesting and sensible questions after the close of the talk. It is my impression that this campaign is much more upon the doctors than it is upon the lay people."

It seems to us that the doctors should take a greater interest in these meetings and attend them if for no other reason than to know what was said so that they can discuss the subject intelligently with their patients. It is difficult for the lay person to always grasp scientific questions.

It happened that this speaker was a professor from the medical school of the University and talked upon the all-important question of diphtheria immunization. Considering that a campaign is being planned by the Minnesota State Medical Association, in coöperation with the Minnesota Public Health Association and the State Board of Health, it seems to us that this meeting was of unusual interest and importance to the local profession.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

THE STATE MEDICAL MEETING

The annual meeting of the State Medical Association will be held in Saint Paul, May 13, 14 and 15, 1929. Sessions will be held at the Masonic Temple, which has proved especially well adapted for the meetings of both sections.

Clinics will be offered all day Monday in the various specialties by members of the Ramsey County Medical Society, who are acting as hosts to the Association members this year.

The Medical Economics meeting, which has come to be an annual Monday night affair and to which members and their families are invited, will be addressed by Michael Davis of the Julius Rosenwald Fund, Chicago, and Dr. Morris Fishbein, editor of the A. M. A. Journal.

This year the scientific meetings will be addressed by a number of nationally known physicians: Dr Elliott P. Joslin, Professor of Medicine at Harvard; Dr. Clarence W. Hopkins, Chief Surgeon of the Northwestern Railway, Chicago; Dr. W. T. Engelback, Endocrinologist, Saint Louis; Dr. George P. Muller, Professor of Surgery, University of Pennsylvania; Dr. Henry G. Bugbee, Urologist, New York City.

UPPER MISSISSIPPI MEDICAL SOCIETY

Officers for the coming year were elected at the annual meeting of the Upper Mississippi Medical Society, January 31. It was also voted to hold a fall meeting at Little Falls in connection with the sessions of the Stearns and Benton county medical societies.

The new officers are: President, Dr. Thayer Davis, Wadena; first vice president, Dr. Robert Christie, Long Prairie; third vice president, Dr. J. J. Ratcliffe, Aitkin; secretary-treasurer, Dr. G. I. Badeaux, Brainerd.

Dr. B. W. Kelly, Aitkin, and Dr. S. S. Shannon, Crosby, were chosen delegates to the State Medical association convention at Minneapolis, with Dr. M. P. Gerber, Brainerd, and Dr. John A. Thabes, Jr., Brainerd, as alternates.

The day's session closed with a banquet at the Masonic hall. Thirty-five doctors attended.

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The annual meeting of the American Association for the Study of Goiter will be held this year at Dayton, Ohio, on March 25, 26 and 27. The primary object of this association is to bring together each year men who are especially interested in the study of goiter and its associated problems. Members of state and provincial medical societies are eligible and cordially invited to participate as attending members.

The 1928 meeting, which was held at Denver, was a decided success. Professor B. Breitner of the Von Eiselsberg Clinic of Vienna and Dr. Gulbrand Lunde, professor of biochemistry of Oslo, Norway, were the foreign guest speakers. Drs. H. S. Plummer, S. F. Haines, J. deF. Pemberton and William Boothby of The Mayo Clinic held clinics and presented papers. Among the other contributors to the program were W. Blair Mosser of the University of Pennsylvania; W. H. Cole, N. A. Womack and S. M. Gray of Washington University, St. Louis; A. E. Hertzler, Halstead, Kansas; J. L. DeCourcy, Cincinnati; Allen Graham, Cleveland; H. M. Clute of Lahey Clinic, Boston; J. Tate Mason of Mason Clinic, Seattle; and Willard O. and P. K. Thompson of the Massachusetts General Hospital Thyroid Clinic.

The first day of the Dayton meeting will be given over to diagnostic clinics in the morning and several short papers during the afternoon chiefly concerned with recent experimental work. On the second day, operative clinics will be held at the Miami Valley Hospital, St. Elizabeth's Hospital and at the Soldiers' Home Hospital. The afternoon of the second day and the morning and afternoon of the third day will be given over to the presentation and discussion of scientific papers.

The headquarters will be at the Hotel Miami. Dr. William A. Ewing is President of the Montgomery County Medical Society, under whose auspices the meeting is to be held. Dr. E. M. Huston is the General Chairman of the Committee on Arrangements. Dr. H. C. Haning is Chairman of the Hotel Committee. All communications in regard to hotel reservations should be addressed to Dr. Haning at the Reibold Bldg., Dayton, Ohio.

MISCELLANEOUS

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Robert McGraw, negro, Villard, Minnesota, was arrested Jan. 21, 1929, on a complaint filed by the investigator of the Minnesota State Board of Medical Examiners charging him with practising healing without a Basic Science certificate. The complaint involves the treatment by McGraw of one Frank Weber. Weber is a diabetic and is under medical treatment at the present time.

A preliminary hearing was held in the case at Glenwood, Minnesota, Saturday, Feb. 2, 1929. The defendant was represented by the same counsel he had last June. After a hotly contested hearing the defendant was bound over to the District Court for trial at the next term of Court under bonds of $750 to stand trial.

OBITUARY

Charles Lyman Greene

1862-1929

Dr. Charles Lyman Greene of Saint Paul was born in the town of Gray, Maine, September 21, 1862, the son of Dr. William Warren Greene, who practised surgery in Massachusetts and Maine and later was professor of surgery in the University of Michigan.

As a result of his father's death in 1881, Charles Lyman entered a railroad office but later determined to make use of his father's medical library. Following his marriage to Miss Jessie Rice in 1886 he took up the study of medicine at the University of Michigan. He later changed to Minnesota, where he graduated in 1890. After postgraduate study abroad, he was appointed first assistant city physician of Saint Paul in 1891. Following another trip abroad and after attending lectures at Harvard and Johns Hopkins universities he was appointed instructor in applied anatomy at the University of Minnesota in 1894; professor of clinical medicine and physical diagnosis in 1897, and professor of theory and practice of medicine in 1903. Dr. Greene became professor of medicine and chief of the Department of Medicine in 1909, a position he filled until 1915. Until September, 1928, Dr. Greene had been chief-of-staff at St. Luke's Hospital in Saint Paul for several years.

Dr. Greene was a member of the following societies: the Association of American Physicians, the American Association for the Advancement of Science, the Minnesota Academy of Medicine, the American College of Physicians, the American Therapeutic Society. He was at one time the president of the Minnesota State Medical Association and was the first president of the Minnesota Society of Internal Medicine. He was formerly medical director of the Minnesota Mutual Life Insurance Company and president of the National Association of Life Insurance Examiners.

Dr. Greene became well known nationally as a medical author. He appeared frequently in local medical journals and his articles were published in the New York Medical Journal and the British Medical Journal. He was the author of a book on Medical Examination for Life Insurance, and his Medical Diagnoses, which expanded as it went through six editions (the last edition appearing in 1926), was his most important contribution.

Dr. Greene was a member of the Minnesota Club and the University Club of Saint Paul; the Lafayette Club, Lake Minnetonka; the National Arts Club of New York City; the Authors Club, Royal Societies Club and American Universities Club of London. He was also a member of Nu Sigma Nu, Alpha Omega Alpha and Delta Kappa Epsilon.

During the World War Dr. Greene was obliged on account of physical disability to apply for service as Contract Surgeon. He was, however, commissioned as Major, October 11, 1918; Lieutenant Colonel, April 28, 1919; Colonel, Medical Section, Officers' Reserve Corps, July 15, 1919.

His death came rather suddenly January 19, 1929, thus terminating a period of a year or more of enforced inactivity on account of ill health. Dr. Greene's generosity and equanimity endeared him to a host of friends both within and outside the ranks of the profession.

He is survived by two daughters, Mrs. Frederick Ritzinger of Saint Paul and Mrs. Alfred Schweppe of Seattle, Wash.

Johannes K. Moen

1867-1929

Dr. Johannes K. Moen, 61 years old, for 20 years a practising physician in Minneapolis, died Feb. 3, 1929. He was born in Tellemarken, Norway, in March, 1867, and came to this country in 1885. He lived on a farm near Kenyon, Minn., and attended the Red Wing seminary. Dr. Moen was graduated from the medical school at the University of Minnesota in 1893, and practised medicine in Windom, Minn., before locating in Minneapolis.

Dr. Moen was a member of several fraternal organizations, including Fraternal Order of Ancient Masons, Sons of Norway, and Scandinavian American Fraternity, of which he was head physician. Dr. Moen wrote several books in the Norwegian language.

Surviving are four children: One daughter, Mrs. Rolf Opjorden of Milan, Minn.; and three sons, Frithjof G., Dr. Johanes R., Jr., and Luther J., all of Minneapolis.

George Lewis Saylor

1859-1929

Dr. G. L. Saylor, aged 70, one of the first physicians to locate in Hibbing, died at his home Feb. 1, 1929, following a long illness. Suffering a stroke Sept. 11, he had been confined to his bed since then, gradually sinking until the end came.

George Lewis Saylor was born March 22, 1859, at Columbus, Ga. He was a graduate of Independent College of Medicine, Chicago, and also a graduate pharmacist. He located in Eveleth in 1901, later going to Hibbing. He first practised at Benson, Minn.

In his early days Dr. Saylor was a well-known athlete. He was a member of the Red Wing, Minn., firemen's hose team which won the world's championship at Albert Lea in 1876. He was a member of the American Medical Association and the Minnesota Pharmaceutical Association and the Old Settlers of Hibbing.

Surviving are the widow and a son, John, Hibbing, and a brother, Charles, living in Ladin, S. D.

OF GENERAL INTEREST

Dr. James A. Cosgriff has moved from North Mankato to Olivia.

Dr. and Mrs. George Douglas Head are spending the winter months in California.

Dr. and Mrs. N. O. Pearce of Minneapolis are visiting in St. Petersburg and Miami, Florida.

Dr. Roger G. Hassett, formerly of Bird Island, is now located in Mankato, where he has opened offices in the Medical Block.

Dr. J. H. Bliss of Rochester has gone to Brooklyn, N. Y., where he will be Junior Surgeon at the Methodist Episcopal Hospital.

Dr. Gordon G. St. Clair has moved from Nopeming, Minnesota, to Ah Gwah Ching, where he is associated with the Minnesota State Sanatorium.

Mr. and Mrs. George Treat Trenholm of Rochester are receiving congratulations on the birth of a son. Mrs. Trenholm is the daughter of Dr. and Mrs. Charles H. Mayo.

Dr. and Mrs. Paul Oberg and daughter, Margaret, have returned from a five months' tour of England and the European continent. Dr. Oberg spent three months in postgraduate study on the eye in Vienna.

Mrs. William Davis, wife of Dr. William Davis of Saint Paul, died February 18 following an operation performed the week before. Dr. and Mrs. Davis celebrated their golden wedding anniversary last summer.

Announcement has been received from Dr. B. H. Hager, Rochester, of the opening of an office for the practice of urology in association with Dr. Anders Peterson at 1136 West Sixth Street, Los Angeles, Calif.

Word has been received of an excellent opening for an experienced young physician and surgeon at Carrington, North Dakota. Communications should be addressed to Mr. J. S. Odland of the First National Bank of Carrington.

Dr. L. R. Boies, who had his offices at 420 LaSalle Bldg., Minneapolis, has gone to Boston to specialize in Oto-laryngology. He expects to spend the next three years in study at Harvard Medical School and at the Massachusetts Eye and Ear Infirmary.

Dr. Archa E. Wilcox has been elected chief of staff of Eitel Hospital, Minneapolis, succeeding Dr. J. C. Sessions. Dr. C. N. Spratt was named first vice-president; Dr. F. R. Hirschfield, second vice-president, and Dr. George D. Eitel, secretary-treasurer.

Members of the state executive committee re-appointed for 1929 are: Dr. H. Longstreet Taylor and W. A. Laidlaw, St. Paul; Dr. Alfred E. Koenig, Minneapolis; Dr. O. E. Locken, Crookston; Dr. A. T. Laird, Duluth, and Mrs. J. A. Thabes, Brainerd.

Dr. P. E. Hermanson has disposed of his practice at Ivanhoe and recently moved to Hendricks, where he has taken over the practice of the late Dr. L. E. Nelson. Dr. William Yaeger of Revillo, South Dakota, has purchased the practice of Dr. Hermanson at Ivanhoe.

The marriage has been announced of John Archibald Cameron, Jr., son of Dr. and Mrs. J. A. Cameron of Saint Paul, to Miss Violet Marie Halloran of Saint Paul, which took place January 18. Mr. Cameron is a student in the college of medicine at the University of Minnesota.

Dr. S. A. Slater, superintendent of Southwestern sanatorium, Worthington, has been appointed to the executive committee of the Minnesota Public Health association. Dr. Slater has been prominent in state anti-tuberculosis activities for years, and won national prominence as the result of a study of tuberculosis infection in children in southern Minnesota.

Dr. Robert Earl of Saint Paul has been re-elected chairman of the board of directors of the Northwestern Baptist Hospital Association for the year 1929, bringing his years of service in this capacity to twenty-five. Dr. George Earl was re-elected president; Dr. Frank Peterson of Minneapolis, vice-president, and Rev. G. Arvid Hagstrom, secretary-treasurer.

Dr. A. L. Haynes, for five years junior physician at the state school for feeble-minded at Fairbault has been announced as the successor to Dr. D. E. McBroom, formerly senior physician of the institution. Dr. McBroom is now head of the epiletic colony at Cambridge. Dr. Jackson Herbert of Spartansberg, S. C., recently affiliated with the Philadelphia general hospital, assumed his new duties as junior physician at the school in January.

STATE BOARD OF MEDICAL EXAMINERS

At a meeting of the State Board of Medical Examiners held February 15, Dr. E. T. Sanderson of Minnesota was elected executive secretary to take the place of Dr. A. E. Comstock of Saint Paul. A few days previous to the meeting the announcement had been made of the appointment of Dr. Edward J. Engberg of Saint Paul as Board member.

Following the death of Dr. McDavitt in March, 1926, the duties of the office of Executive Secretary had been carried out by Dr. A. E. Comstock of Saint Paul. Under the new Medical Practice Act passed by the last legislature a new Board of seven members was reappointed. Dr. Comstock received a one year appointment from May 1, 1927, but has remained active until his successor was appointed February 15. According to the new Act the Council of the State Medical Association shall recommend three physicians within thirty days of the expiration of the term of any Board member and the Governor may appoint one of the three names submitted.

The office of the State Board of Medical Examiners will continue to be conducted at 524 Lowry Medical Arts Building, Saint Paul.

NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

CIBA COMPANY, INC.
Lipoiodine-Ciba, Diagnostic
Ampules Lipoiodine-Ciba, Diagnostic, 5 c.c.

H. K. MULFORD CO.
Acidophilus Bacillus Liquid-Mulford

E. R. SQUIBB & SONS
Dandelion Pollen Allergen Solution-Squibb; English Plantain Pollen Allergen Solution-Squibb; Goldenrod Pollen Allergen Solution-Squibb; Perennial Rye Grass Pollen Allergen Solution-Squibb; Ragweed (Dwarf) Pollen Allergen Solution-Squibb; Ragweed (Giant) Pollen Allergen Solution-Squibb; Red Top Pollen Allergen Solution-Squibb; Russian Thistle Pollen Allergen Solution-Squibb; Sunflower Pollen Allergen Solution-Squibb; Bermuda Grass Pollen Allergen Solution-Squibb, 5 c.c.; June Grass Pollen Allergen Solution-Squibb, 5 c.c.; Mugwort Pollen Allergen Solution-Squibb, 5 c.c.; Orchard Grass Pollen Allergen Solution-Squibb, 5 c.c.; Sagebrush Pollen Allergen Solution-Squibb, 5 c.c.; Western Ragweed Pollen Allergen Solution-Squibb, 5 c.c.

ABBOTT LABORATORIES
Ampoules Metaphen Solution 1:1,000, 10 c.c.

ELI LILLY & CO.
Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated
Tetanus Antitoxin, 20,000 units

H. K. MULFORD CO.
Diphtheria Toxin for the Schick Test, two 10 c.c. vial packages

PARKE, DAVIS & CO.
Tetanus Antitoxin Globulin, 20,000 units

E. R. SQUIBB & SONS
Diphtheria Toxin-Antitoxin Mixture (Sheep)-Squibb
Diphtheria Toxoid-Squibb
Parathyroid Hormone-Squibb

UNITED STATES STANDARD PRODUCTS CO.
Diphtheria Toxin-Antitoxin Mixture 0.1 L (Non-Sensitising)

TRUTH ABOUT MEDICINES

Normal Horse Serum.—A normal horse serum (New and Non-official Remedies, 1928, p. 348) marketed in packages of one syringe containing 10 c.c.; in packages of two syringes each containing 10 c.c.; in packages of one vial containing 25 c.c.; in packages of one double ended vial containing 50 c.c.; also in packages of one double ended vial containing 100 c.c. (The National Drug Co., Philadelphia.)

Diphtheria Antitoxin, Extra Concentrated.—A diphtheria antitoxin, concentrated (New and Non-official Remedies, 1928, p. 342) prepared by inoculating horses with diphtheria toxin. It is marketed in single vial packages of 1,000 and 20,000 units; in syringes containing, respectively, 1,000, 3,000, 5,000, 10,000 and 20,000 units. (The National Drug Co., Philadelphia.)

Tetanus Antitoxin.—A tetanus antitoxin, concentrated (New and Non-official Remedies, 1928, p. 356) prepared by inoculating horses with tetanus toxin. It is marketed in packages of one vial containing 1,500 units; in packages of one syringe containing 1,500 units; also in packages of one syringe containing 5,000 units. (The National Drug Co., Philadelphia.)

Antistreptococcic Serum.—A polyvalent antistreptococcus serum (New and Non-official Remedies, 1928, p. 361) obtained by immunizing horses with streptococci from various clinical sources. It is marketed in packages of one syringe containing 20 c.c. and in packages of one double ended vial containing 50 c.c. (The National Drug Co., Philadelphia.)

Vaccine Virus.—A vaccine virus (New and Non-official Remedies, 1928, p. 362) marketed in packages containing, respectively, one, five and ten capillary tubes. (The National Drug Co., Philadelphia.)

Rabies Vaccine-Human (Semple Method).—An antirabic vaccine (New and Non-official Remedies, 1928, p. 363) prepared according to the general method of David Semple (phenol killed). Marketed in sets of two packages, the first containing four 2 c.c. vials and the second containing ten 2 c.c. vials. (The National Drug Co., Philadelphia.)

Pertussis Vaccine.—A pertussis bacillus vaccine (New and Non-official Remedies, 1928, p. 376) marketed in packages of one 5 c.c. vial containing 4,000 million killed pertussis bacilli per c.c.; in packages of one 15 c.c. vial containing 4,000 million killed pertussis bacilli per c.c.; in packages of one 30 c.c. vial containing 4,000 million killed pertussis bacilli per c.c. (The National Drug Co., Philadelphia.)

Pneumococcus Vaccine.—A pneumococcus vaccine (New and Non-official Remedies, 1928, p. 379) marketed in packages of one 5 c.c. vial containing 5,000 million killed pneumococci per c.c.; in packages of one 15 c.c. vial containing 5,000 million killed pneumococci per c.c.; in packages of one 30 c.c. vial containing 5,000 million killed pneumococci per c.c. (The National Drug Co., Philadelphia.)

Staphylococcus Vaccine.—A staphylococcus vaccine (New and Non-official Remedies, 1928, p. 391) marketed in packages of one 5 c.c. vial containing 2,000 million killed bacilli per c.c.; in packages of one 15 c.c. vial containing 2,000 million killed bacilli per c.c.; in packages of one 30 c.c. vial containing 2,000 million killed bacilli per c.c. (The National Drug Co., Philadelphia.)

Typhoid Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383) marketed in packages of one 5 c.c. vial containing 1,500 million killed typhoid bacilli per c.c.; in packages of one 15 c.c. vial containing 1,500 million killed typhoid bacilli per c.c.; in packages of one 30 c.c. vial containing 1,500 million killed typhoid bacilli per c.c. (The National Drug Co., Philadelphia.)

Typhoid-Paratyphoid Combined Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383) marketed in packages of three 1 c.c. vials, the first dose containing 500 million killed typhoid bacilli, 375 million killed paratyphoid A bacilli and 375 million killed paratyphoid B bacilli, the second and third doses each containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli; in packages of one 5c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli per c.c.; in packages of one 15 c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli per c.c.; in packages of one 30 c.c. vial containing 1,000 million killed typhoid bacilli, 750 million killed paratyphoid A bacilli and 750 million killed paratyphoid B bacilli per c.c.; in packages of ninety 1 c.c. vials (thirty immunizations), being thirty sets of three doses, the first dose containing 500 million killed typhoid bacilli and 375 million each of killed paratyphoid A and B bacilli, the second and third doses containing, respectively, twice the number of bacilli in the first dose. (The National Drug Co., Philadelphia.)

Typhoid-Paratyphoid A Vaccine.—A typhoid vaccine (New and Non-official Remedies, 1928, p. 383) marketed in packages of one 5 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c.; in packages of one 15 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c.; in packages of one 30 c.c. vial containing 750 million killed typhoid bacilli and 250 million killed paratyphoid A bacilli per c.c. (The National Drug Co., Philadelphia.)

Scarlet Fever Streptococcus Toxin for Preventive Immunization-P. D. & Co.—It is prepared by the method of Drs. Dick by license of the Scarlet Fever Committee, Inc. (New and Non-official Remedies, 1928, p. 392). Marketed in packages of five vials of toxin, containing, respectively, 500, 2,000, 8,000, 25,000 and 80,000 skin test doses; in packages of fifty vials of toxin, ten containing 500 skin test doses, ten containing 2,000 skin test doses, ten containing 8,000 skin test doses, ten containing 25,000 skin test doses, and ten containing 80,000 skin test doses. Parke, Davis & Co., Detroit. (Jour. A. M. A., January 5, 1929, p. 55.)

Bothrops Antitoxin.—An antitoxic serum prepared by immunizing animals against the venom of the tropical American serpents of the genus *Bothrops*. Evidence has accumulated to show that the venom of certain snakes may be neutralized by the employment of a serum obtained from animals that have been injected with venom from a snake of the same family. Bothrops antitoxin is used to neutralize the venom injected by the bite inflicted by members of the genus *Bothrops*. The serum is administered intramuscularly or subcutaneously; in cases seen late or in the presence of severe symptoms it may be administered intravenously.

Antivenin (Bothropic)—Tropical American Anti-Snake-Bite Serum.—An antitoxic serum prepared by injecting horses with venom from serpents of the genus *Bothrops*, especially of the "Fer-de-Lance" *(Bothrops atrox)*. It is claimed to have neutralizing effect against the venom of the genus represented. The serum is marketed in syringes of 10 c.c. (a single dose). H. K. Mulford Co., Philadelphia.

Ephedrine Hydrochloride-Lilly.—A brand of ephedrine hydrochloride-N. N. R. (New and Non-official Remedies, 1928, p. 175). It is also supplied in the form of Pulvules Ephedrine Hydrochloride-Lilly, ⅜ grain, Pulvules Ephedrine Hydrochloride-Lilly, ¾ grain and Solution Ephedrine Hydrochloride-Lilly, 3%. Eli Lilly & Co., Indianapolis.

Tablets Ephedrine Hydrochloride-Squibb, ⅜ grain.—Each tablet contains ephedrine hydrochloride-Squibb (*The Journal*, September 1, 1928, p. 645) ⅜ grain. E. R. Squibb & Sons, New York.

Tablets Ephedrine Hydrochloride-Squibb, ¾ grain.—Each tablet contains ephedrine hydrochloride-Squibb (*The Journal*, September 1, 1928, p. 645) ¾ grain. E. R. Squibb & Sons, New York.

MacDowell's Wheat-Nut-Casein Dietetic Flour.—A flour prepared from wheat, edible nuts and casein, to which has been added a leavening mixture composed of potassium bitartrate and sodium bicarbonate and sodium chloride as flavoring. The product has approximately the following composition: protein, 28.67; carbohydrate, 28.68; fat, 18.69; ash, 5.64; fiber and pentosans, 7.59; and water, 8.49. MacDowell's Wheat-nut-casein dietetic flour is proposed for use in the dietetic treatment of diabetes and wherever restriction of carbohydrate in the diet is desired. MacDowell Brothers, Ogdensburg, N. Y.

Pirquet Test for Tuberculosis (Bovine Type).—Tuberculin-Koch (New and Non-official Remedies, 1928, p. 368) marketed in capillary tubes, put up in packages, respectively, of one tube, two tubes and ten tubes, accompanied by controls. H. K. Mulford Co., Philadelphia.

Tuberculin Ointment (Moro Ointment) (Bovine Type).—An ointment containing tuberculin-Koch (New and Non-official Remedies, 1928, p. 368) 50 per cent, with an equal part of hydrous wool fat. H. K. Mulford Co., Philadelphia.

Tuberculin Intracutaneous (Bovine Type).—Marketed in single packages of one intradermal syringe containing tuberculin-Koch (New and Non-official Remedies, 1928, p. 368) 0.2 mg. in physiological solution of sodium chloride, 0.05 c.c.; in packages of five intradermal syringes each containing tuberculin-Koch (New and Non-official Remedies, 1928, p. 368) 0.2 mg. in physiological solution of sodium chloride; and in single vial packages containing tuberculin-Koch (New and Non-official Remedies, 1928, p. 368) 0.012 Gm. in physiological solution of sodium chloride, 3 c.c. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., January 19, 1929, p. 231.)

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of January 9, 1929

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 9, 1929, at 8 o'clock. Dinner was served at 7 o'clock. The meeting was called to order by the President, Dr. C. N. McCloud. There were 46 members present.

Minutes of the December meeting were read and approved.

Dr. J. E. Hynes stated that the Academy year began with the January meeting under the new Constitution, and made a motion that the present officers be ratified for the year 1929. Motion carried.

Dr. A. E. Wilcox (Minneapolis) reported a case of Esophageal Defect, and repair of same with restoration of function. The patient was presented.

Mr. B. A., age 71, married, farmer. Family history negative to malignancy.

Previous History: The patient had typhoid fever when a youth. Otherwise he was well until three years ago when he first noticed a periodical hoarseness which gradually became permanent and more marked with stenosis of the larynx, necessitating tracheotomy. Subsequent study resulted in a diagnosis of carcinoma of the larynx. In the spring of 1928 he sought advice from several sources and in May, 1928, the larynx was removed with a cautery. The esophagus was found to be involved, and that portion of the esophagus extending from a point a little above the sternum to the pharynx was sacrificed.

The patient first came under my notice in June, 1928, at which time the middle cervical region had been left wide open and was showing progressive healing by granulation. When attempting to swallow, large amounts of mucus flowed from the crater-like operated field and during the contraction of the pharyngeal muscles the epiglottis could be seen plainly in activity. The upper end of the esophagus lay exposed on a level with the upper extremity of the trachea, its mucous membrane pouting in the manner characteristic of similar mucous-lined tubes. At that time, as granulation was progressive, he was advised to wait until the cervical wound was smaller before discussing the advisability of attempting repair of the esophageal defect.

He returned to his home in Canada and reported again to me in December, 1928, having gained 16 pounds in weight, with no evidence of local recurrence, and general health good. From the time of the operation for laryngectomy per cautery in May to the time of his operation December 14, 1928, for repair of the esophageal defect, he had been fed through a stomach tube inserted directly into the esophageal opening at the base of the cervical operative area.

On December 14th he was given 1 HMC tablet at 6:30 a. m.; a second HMC tablet at 7:30 a. m. In the course of an hour he was completely narcotized and no further anesthetic was used except periodically a few whiffs of chloroform through the tracheotomy tube. The opening in the neck at this time had healed down to a point in the lower portion of the cervical region presenting an opening about one inch in diameter, the healing having taken place in the skin and superficial tissues only. The pharynx communicated with the opening and a large amount of mucus was still drained from this aperture. The upper portion of the esophagus had become attached by scar tissue with the mucous membrane everted at this point practically on a level with the manubrium sterni.

An incision in the cervical region in the midline was made extending from a little below the chin to the opening above described. The everted mucous membrane of the esophagus which had become firmly adherent to the surrounding structure and the outer wall of the esophagus, was freely dissected from its attachments. The esophagus itself was further freed by blunt dissection in the mediastinum and gradually it was found that it could be stretched upward until it came in contact with the lower portion of the pharynx and the region of the hyoid bone without much tension. The upper end of the esophagus was then attached to this region with interrupted mattress sutures of chromic catgut, and connective tissue was brought over the line of union by interrupted Lambert mattress sutures. Two lateral rents of the esophagus, about one-half an inch long, were repaired in the same manner. The surrounding connective tissue with what I took to be the sterno-hyoid muscles were then brought together in the midline in front of the esophagus and an attempt was also made to close the upper end of the trachea. The skin was closed with dermal sutures. The patient was fed through a small stomach tube for five days. Then these feedings were interrupted with periodically allowing the patient to swallow liquids and eventually to eat solid foods. About the seventh day liquids commenced to leak through the lower portion of the wound and it was obvious that an esophageal fistula had developed; also considerable mucus was temporarily discharged, particularly when the patient made muscular efforts at swallowing. These symptoms, however, rapidly disappeared so that at the present time he has practically healed and can eat and swallow routine diet, solids and liquids.

An interesting phenomenon has also developed and, in fact, developed as early as the 10th day following the operation, which consists of his exhibiting the ability of making himself understood through articulation by means of getting sufficient air into the mouth and pharynx and then, by forced expulsion, to talk in a peculiar whispering fashion, but sufficient to be understood.

Further report as regards recurrence and progress will be made in the future.

DISCUSSION

Dr. A. Schwyzer (St. Paul): I think this is an unusually pretty result which the doctor has shown us. The defects in the pharynx and esophagus are very difficult to close as a rule, as the everlasting activity

of the muscles is liable to make a fistula. I remember one case which was quite similar to this, where we could see the epiglottis on the side, and where we had to do about three operations to close it. The explanation that the doctor gives for the good voice that the man has is the explanation that you find given in these cases. The patient forms enough of a pouch in the hypopharynx and nasopharynx filled with air, and then expresses it when he begins to talk. I think this man talks better than the average after a repair of this kind.

Dr. W. P. Larson (Minneapolis) gave a talk on "The Problem of Anaphylaxis."

Dr. E. T. Bell (Minneapolis) gave a talk, illustrated with charts and lantern slides, on "Lipoid Nephrosis."

DISCUSSION

Dr. S. Marx White (Minneapolis): I wish to express the extraordinary interest that Dr. Bell's presentation arouses and express my own appreciation of the value of his study from the combined clinical and pathological standpoints. We in Minnesota are privileged to see a type and quality of work in this particular field that is unusual. I believe it is as valuable a piece of work as is being done anywhere.

I would be interested, in connection with the discussion of this paper, to hear something as to the cause of arterial hypertension—hyperpiesia—with which the arteriosclerotic kidney is associated. What we often see from the clinician's standpoint is a group of individuals with hypertension, with a familial history of hyperpiesia, and in whom (when seen early) no evidences of any form of toxemia and no evidences of renal damage can be found.

There is much to argue for a fundamental, functional disturbance of the pressor mechanism in which frequently recurring pressure increases are brought about by factors which we may, for the moment, group as emotional and which recur frequently and over many years. While there is good ground for the belief that toxic substances play a part in the hypertension of glomerulonephritis and of the toxemia of pregnancy, etc., similar grounds seem to be lacking in hyperpiesia, in which definitely toxemic states may follow the sclerosis of large numbers of renal glomeruli but do not appear to precede.

The part played by guanidine derivatives, so ably and persistently studied by Major, of Kansas, and his associates, remains to be shown. The part played by cholesterols may prove to be of interest. The high cholesterol content of the blood in certain nephroses has been brought out by Dr. Bell. In nephrosis, cholesterolemia is not usually associated with arterial hypertension. On the other hand many individuals with hyperpiesia in a stage in which there are no, or occasionally only minimal, evidences of renal damage, have cholesterol figures measurably above the normal though not very high. A few facts are at hand but they remain few and uncorrelated, so far as the causation of essential hypertension is concerned.

Dr. George Fahr (Minneapolis), in connection with Dr. Bell's paper, reported a case of nephrosis which had been studied for several years.

Dr. E. T. Bell: In answer to Dr. White's question as to how to explain hypertension, I think we have to explain that on the basis of the contraction or narrowing of the arterioles or capillaries with consequent blocking to the blood stream. The trend of opinion has been, previously, that lipoid nephrosis is a metabolic disease, but evidence shows pretty clearly that it is a disease of the kidney. I think now we have got to make out the type of injury in the kidney; that it is not a disease of metabolism.

Dr. Arnold Schwyzer read a letter which had been written to Dr. Ulrich by Dr. Hilding Berglund, who is at present in China under the Rockefeller Foundation.

The meeting adjourned.

Carl B. Drake, M.D.,
Secretary.

NEISSER (GONOCOCCIC) VACCINE AND ERYSIPELAS VACCINE (NATIONAL DRUG CO.) NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that the National Drug Co., Philadelphia, markets Neisser (Gonococcic) Vaccine and Erysipelas Vaccine. In 1924 the Council omitted from New and Non-official Remedies all gonococcus vaccines and in 1925 it omitted all streptococcus vaccines because experience with such preparations had not established their value and because the Council's consultants concluded that they had no field of usefulness. In accordance with this action, the Council declared the preparations of the National Drug Co. inadmissible to New and Non-official Remedies (Jour. A. M. A., January 5, 1929, p. 44).

TARTAROFF

This is exploited as a "marvelous discovery" that "acts like magic on the teeth"; "Tartaroff is the greatest scientific discovery of the age. Nothing like it ever prepared before. It is not a tooth paste but a simple, harmless preparation that can be applied to the teeth in a few seconds. Immediately the teeth are transformed into gems of pearl white beauty." From the analysis of the American Dental Association it appears that Tartaroff is, for all practical purposes, a mixture of hydrochloric acid and water, with a little coloring matter added. The claim that a 1.2 per cent solution of hydrochloric acid is harmless to the teeth is pernicious to a degree. (Jour. A. M. A., January 5, 1929, p. 73.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SURGERY

SUPERVISORS:

DONALD K. BACON,
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

DIVERTICULA OF THE MALE URETHRA: Robert W. McKay, M.D., and J. A. C. Colston, M.D., Baltimore (Surg., Gynec., and Obst., XLVIII, No. 1, 51-62). The authors review the literature on diverticula of the male urethra and find 84 reported cases. They discuss 8 unreported and two previously reported cases.

Most writers on the subject adopt the classification of Watts, which is as follows:

A. Congenital diverticula
B. Acquired diverticula
   1. From dilatation of the urethra due to
      a. Urethral calculus
      b. Urethral stricture
   2. With perforation of the urethra resulting from
      a. Injuries to the urethra
      b. Rupture of abscesses into the urethra
      c. Rupture of cysts into the urethra

The authors add an additional heading to this list: pseudodiverticula of the urethra, urine-filled urethral pouches communicating directly with the urethra. Such pseudodiverticula result from the dilatation of normal structures in the posterior urethra due to back pressure. The old classification of urethral diverticula into true and false depending on the character of the wall of the cavity, is no longer accepted.

The symptoms depend on the location, size, depth and degree of infection of the diverticulum. They may simulate very closely those due to posterior urethritis and verumontanitis. Deep-seated perineal pain, dysuria and terminal dribbling are usually the outstanding symptoms. In diverticula situated anteriorly, a fluctuant tumor filling during urination and emptying under pressure, may be palpated.

The diagnosis is usually made by means of cysto-urethroscopic examination and *x*-ray. Various opaque media may be introduced into the diverticulum to outline it under the *x*-ray. Two types of surgical treatment are possible, that is, resection of the diverticulum and repair of the urethral opening of the diverticulum, and the second converting the cavity of the diverticulum and of the prostatic urethra into one. This type of surgery is possible when the diverticulum is situated in the posterior urethra. Of the authors' ten cases, seven were operated on, and one case was treated by the application of silver nitrate. In this case the opening of the diverticulum was large and provided good drainage.

Complete resection of the sac of the diverticulum with closure of the communication with the urethra was done in five of the seven operated cases. In two cases in which the cavities of the diverticula were shallow, the openings between the urethra and diverticula were enlarged to insure good drainage.

C. M. SPOONER, M.D.

OBSTRUCTIVE HYDRO-URETERAL ANGULARITY WITH HYDRONEPHROSIS IN CHILDREN: Frank Hinman, M.D., San Francisco (Arch. of Surg., Jan., 1929, Vol. XVIII, Part 1, No. 1, 21-62). Hinman discusses hydro-ureter and hydronephrosis occurring in children, as a result of long continued partial obstruction. The site of the obstruction is in the lower urinary tract or in the lower ureter and may be congenital or acquired. It may occur in girls in whom no obstructive lesion can be demonstrated. Hinman differentiates the condition from megalo-ureter in which the dilatation results from atony, from hydronephrosis due to obstruction at the uretero-pelvic junction, and from the common type of hydro-ureter seen in adults in which the marked angularity is usually lacking. In hydro-ureteral angularity in children, the ureteral wall hypertrophies and elongates as well as dilates, and the angularity produced forms kinks and bends that come bound together by adhesions and collateral blood vessels. In the presence of such pathological changes removal of the primary obstruction fails to arrest the growth of the increasing hydronephrosis.

As renal repair has been shown to be more rapid and more complete in children the prognosis is better than in urinary obstruction with secondary renal insufficiency in adults. An improvement in renal function can be obtained prior to operation by continuous drainage of the renal pelvis through ureteral catheter.

Hinman calls attention to the hopelessness with which the condition has been considered in the past. Of his six operative cases the majority has shown improvement in general physical condition and an increased renal function as evidenced by an increased excretion of phenosulphonephthalein.

Hinman recommends a two-stage surgical procedure. First, nephrostomy is performed on both sides or only on the more diseased side. The upper portions of both ureters are freed, straightened, and splinted by means of the nephrostomy tubes. When the general

condition and the renal function have improved the second stage is done.

The lower ureters are freed and straightened. The lower ureter is resected, as is the ureteral opening into the bladder. The redundant portion of the lower ureter is resected and the lower end of the now shortened ureter transplanted into the bladder at the site of the resected ureteral orifice. This procedure straightens out the ureter and prevents recurrence of the angularities. Large catheters are introduced into each ureter to act as splints and to provide means of drainage and lavage.

C. MARTIN SPOONER, M.D.

CONGENITAL ABSENCE OF ONE KIDNEY. Meredith J. Campbell, M.D., New York (Annals of Surg., Dec., 1928, Vol. LXXXVIII. No. 6. 1039-1044). While unilateral renal agenesis is usually an autopsy finding, its incidence of one in 1,610 cases makes it of practical importance to the urological surgeon. The condition is compatible with normal health. It is only when the other kidney becomes diseased that it assumes clinical importance.

Campbell reports nine cases found at autopsy and one additional case diagnosed during life by cystoscopic examination. The condition is common in the male and occurs more often in the left than the right side. The adrenal gland was absent on the affected side in four of Campbell's cases. In five cases the presence or absence of the gland was not noted. Campbell attributed the absence of the adrenal to the isolateral vascular agenesis. In some of the reported cases no evidence of blood vessels, on the affected side, was found. No information on this point was given in the other cases.

In the majority of cases there was evidence of ureteral budding. Aplasia or agenesis of the genitalia either unilateral or bilateral is commonly associated with the condition.

The solitary kidney showed compensatory hypertrophy in three cases and was apparently normal in three cases. In three cases in which death was due to uremia, extensive kidney destruction was found in the solitary kidney. During life the diagnosis can only be made by cystoscopic examination and chromoscopy.

C. M. SPOONER, M.D.

GEORGE A. BREON AND SCIENTIFIC MEDICINE

No products of George A. Breon or of the George A. Breon Co. have ever been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies. George A. Breon and Co. is a concern that has carried water on both shoulders. On the one hand it appeals to uncritical and unscientific physicians with a series of prescription products that are both uncritical and unscientific; on the other hand, it has made a number of nostrums for fraudulent mail-order concerns and George A. Breon himself is reported to have been the originator of some of the nostrums. (Jour. A. M. A., January 5, 1929, p. 76.)

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
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THE USE OF BISMUTH IN THE TREATMENT OF CHILDREN WITH CONGENITAL SYPHILIS: Margaret L. Bronson (Amer. Jour. of Dis. of Children, 1928, 36, 1136). The literature since 1922 has contained numerous reports of the use of bismuth in the treatment of patients with syphilis. The earlier literature contains references to general and local reactions after the use of bismuth, but reactions have apparently become less frequent.

In the administration of bismuth in this clinic, toxic effects have not been encountered.

Interstitial Keratitis.—The only active cases of syphilis in which the patients were treated with bismuth were in this group. The impression is that the acute symptoms subsided at least as quickly under treatment with bismuth as when arsenic and mercury without bismuth was used. In two cases, there was an almost immediate subsidence of symptoms. The children who were treated with bismuth seem to have recovered with less scarring of the corneas.

In regard to the Wassermann reaction of the blood, in three cases it changed from 4+ in both antigens to negative, and in all cases it changed to weaker reactions.

Syphilis of the Central Nervous System.—In one case, after five courses of bismuth, the Wassermann reaction of both the blood and the spinal fluid became negative. The spinal fluid of the second child was completely negative after the third and fifth courses of bismuth, and the Wassermann reaction of the blood had become 1—4. After the sixth course of bismuth, the Wassermann reaction of the blood was negative. The child's Wassermann reactions on the spinal fluid and blood were 4+, and the gold curve was positive after the third course of bismuth.

Fixed Wassermann Reaction.—There are nine children whose Wassermann reactions were not changed by routine treatment with arsenic and mercury. The result of treatment with bismuth has been a change of the Wassermann reaction in eight cases. In three, it became completely negative, and in five 0—4.

R. N. ANDREWS, M.D.

JUVENILE ACRODYNIA: C. W. Wyckoff, M.D. (Amer. Jour. Dis. of Children, January, 1929, page 88). The disease affects infants and young children mainly between the ages of 12 months and 4 years, and is characterized by extreme fretfulness, marked neuromuscular disturbances, sleeplessness and a dull red or

pink rash of varying character sometimes over the entire body, but involving mainly the hands and feet.

As to the question of a disease due to a deficiency in food, this may be ruled out from the facts that in the majority of cases the diets had been perfect. Living conditions do not have any bearing on the condition; in fact, in most cases the diet and surroundings have been perfect, and the disease has occurred in both rural and urban sections.

Observers have not found anything abnormal in the microscopic examination of the blood, except a leukocytosis ranging from 10,000 to 40,000, a fact which certainly indicates an infectious process.

While lying down, the child's head is buried in a pillow, face down; when sitting, the body is in a crouching position, the head and trunk bent forward, so that the abdomen may rest on the thighs. The picture is that of most abject wrechedness.

Profuse sweating is almost always present, giving the skin a cold, clammy feeling. The hair comes out easily, either falling out or being pulled out by the child in its nervous, negative mental attitude. Likewise, the finger-nails or toe-nails may fall off, leaving no sign of an inflammatory condition. The teeth also become loosened and may fall out from constant grating, the gums showing no visible pathologic condition. Anorexia is another constant symptom and the most serious of all. Asthenia is also a symptom. The child sufferers from a dull, nagging pain of some description, and this is most likely a peripheral neuritis, as suggested by Byfield, Peterson and Greenfield. The condition is a peripheral neuritis involving mainly the sensory nerves and showing marked vasomotor disturbances of the extremities.

Rodda claims fairly prompt cessation of symptoms by excising the tonsils and adenoids, if the cases are not far advanced. For the nervous symptoms, sedatives or hypnotics are useless. For the skin eruption and itching, calamine lotion profusely applied gives considerable relief. If the anorexia is complete, gavage should be resorted to and continued sometimes for many weeks.

R. N. Andrews, M.D.

SUBACUTE BACTERIAL ENDOCARDITIS IN CHILDHOOD: William L. Rost, and Alfred E. Fischer (Amer. Jour. of Dis. of Children, 1928, 36, 1144). All statistics show that rheumatic fever is the chief predisposing factor in the development of subacute bacterial endocarditis. Lenhartz, Libman and Schottmüller were among the first to associate nonhemolytic streptococci with subacute bacterial endocarditis.

The early manifestations may be those of a low grade toxemia with an insidious onset, the patient complaining of lassitude, anorexia, pains in the extremities, which are fleeting at times; feverishness, chilliness, headache and occasionally cardiac discomfort. The onset may be more abrupt and acute with high fever, chills and sweats. Later, pallor and curious pigmentation (café au lait) of the skin, particularly of the face, and emaciation are present. Tenderness of the lower sternum, clubbing of the fingers and toes, and swelling of the joints occur, and, as the disease progresses, embolic phenomena appear, such as petechiæ (white centered) on the conjunctivæ, face or upper portion of the chest. Abdominal pain, which occurs most frequently in the left hypochondrium, splenic tenderness and enlargement of the spleen and liver are frequently present. Tender nodules about the pads of the hands, fingers and toes (Osler nodes) are pathognomonic except for their rare occurrence in cases of atypical verrucous endocarditis (Libman and Sacks). An organic cardiac murmur, of course, is quite essential. The finding of large mononuclear cells, the so-called macrophages or histiocytes, in a blood smear taken from the lobe of the ear, the presence of red blood cells in the urine and finally the isolation of a non-hemolytic streptococcus from the blood stream are valuable laboratory aids.

The duration of this malady varies. It depends on the virulence of the infection and the general condition of the patient.

The patient suffering from subacute bacterial endocarditis often looks well in contrast to the rheumatic patient, because there is less involvement of the myocardium and usually decompensation is not present.

Fibrinous pericarditis during the course of subacute bacterial endocarditis is rare.

Hematuria is usually present in subacute bacterial endocarditis and is rare in rheumatic fever.

In general, it may be stated that the prognosis is extremely grave.

R. N. Andrews, M.D.

EYE, EAR, NOSE AND THROAT

SUPERVISORS:

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ARTHUR C. DEAN
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DENTAL CARIES IN PARANASAL SINUS INFECTIONS: Gordon Berry (Arch. of Otolaryng., 1928, VIII, 698). The frequency of dead or abscessed teeth in patients with paranasal sinus disease is very impressive. A dentist can often step in and remove a tooth and the patient proceed to get well.

Examination of a series of specimens in the Harvard laboratories reveals that there are two main classifications of the maxillary sinuses: (1) those with small cavities and thick floors, (2) and those with large cavities and thin floors—the latter group being much the greater. In the small antrum class the roots of teeth are at some distance from the cavity, while in the large antrum type the dental roots mount up into or straddle the floor. In some specimens the floor of the large antrum is only one-sixteenth of an inch thick.

In a typical film of a dental abscess the infection has gradually eaten away sufficient bony tissue to show

rarefaction. In the region of the antrum by its very nature there is little or no bony absorption before the infection reaches the antrum itself.

The crux of the whole argument is that a dead tooth which in the film is seen to reach or extend near to the floor of an antrum is an active menace which must be carefully watched and seriously considered. The trouble will often not be apparent in the dental film. This infection may escape into the antrum and thence through the ostium into the nose. The general conclusion may be reached that one may look to this source for a considerable portion of those nasal difficulties which have been recorded as chronic rhinitis, nasal polypi, chronic anterior ethmoiditis and some vasomotor forms.

Further, a dead or dying tooth in close proximity to the antral floor, no matter how harmless it appears, is a threat. Recurring pains in the antrum on this side, an occasional seepage of pus from the middle meatus, small polypi in this region and even a chronic unilateral nasal congestion otherwise unexplained, should attract attention to the teeth or to a possible buried root. The observation and removal of such a nearby septic focus will clear up many a stubborn nasal and paranasal condition. This claim is reasonable and it has the support of experience.

ARTHUR C. DEAN, M.D., F.A.C.S.

FOREIGN BODIES IN THE STOMACH AND IN THE INTESTINES: M. C. Myerson (Arch. of Otolaryng., Vol. 8, No. 6, December, 1928). Myerson cautions against haste in performing gastrotomy for foreign bodies in the stomach. Even open safety pins, which are not uncommonly swallowed by infants, usually pass unhindered through the entire alimentary canal. Roentgen studies have shown that foreign bodies usually traverse the intestinal tract with the heavier end foremost. Open safety pins almost invariably are propelled along the tract with the closed end first. Myerson reports a series of 39 cases of foreign body in the alimentary tract, 32 of which were pointed. Thirty-six passed with the stool; three were removed surgically. One of the three died, apparently from operative shock.

Gastrotomy performed on infants is usually attended with heavy operative risk. Failure of a foreign object to pass promptly does not necessarily call for surgical interference. Gastrotomy should be done only when signs of perforation develop, or when a large body will not pass the pylorus. Cases are cited where needles, nails, pins, coins, etc., have been retained in the intestinal tract for weeks, and even months. Gastroscopy should be resorted to when possible. The administration of pulpy and starchy foods, to encase pointed foreign bodies, is of questionable value. While most of such cases receive cathartics apparently without ill effect, the practice may be harmful.

THOMAS MYERS, M.D.

LATENT DISEASE OF THE MAXILLARY SINUS: Dr. William Mithhoefer (The Laryngoscope, 1929, XXXIX, 1). That latent disease of the maxillary sinus is of frequent occurrence is not generally believed, according to the author; but his experience shows that many times this cavity is mildly or markedly involved without any nasal symptoms. This pathological change consists of edema of the mucous membrane which often progresses to an atrophic, pyogenic, or even hyperplastic variety of mucous membrane.

The marked involvement of general health of many patients, and the rapid gain in weight, following the radical removal of diseased antrum tissue from an unsuspected maxillary sinus is proof that chronic toxemia from this cavity is often a sufficient reason for the patient's ill health.

The author emphasizes the necessity of the careful examination of every maxillary sinus where there is present a hyperplastic ethmoiditis. His best results have been obtained where the presence of a latent antritis was recognized prior to ethmoid exenteration and a radical antrum operation was done at the time. Many individuals who have recurrent attacks of acute symptoms which subside on routine treatment by a rhinologist are found, upon careful examination, to be suffering with latent, chronic antritis.

X-ray diagnosis must not be depended on too much. The author has found marked hyperplasia in the deep recesses of the antrum in patients with a clean skiagram and a negative lavage. In those doubtful cases lipiodol instillation furnishes a further means for diagnosis.

The conditions that should cause the rhinologist to suspect latent chronic antritis are:

(1) Repeated vasomotor disturbances of the nasal mucosa.
(2) Hyperplastic ethmoiditis.
(3) Protrusion of the membranous middle meatal wall.
(4) Polypoid changes of the inferior turbinal especially in its posterior third.

The author also reached the conclusion that chronic antritis is often responsible for many of the symptoms of hay fever, and that antrum irrigation with hypertonic saline solution during the attack will often bring immediate relief.

ARTHUR C. DEAN, M.D., F.A.C.S.

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